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Research Report 1691

Perspectives on the Virtual Training Program From Members of Its Initial Observer/Controller Team

Theodore M. Shlechter, Ronald E. Kraemer,
David W. Bessemer, and Billy L. Burnside
U.S. Army Research Institute

James Anthony
University of Louisville

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EDGAR M. JOHNSON
Director

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James Anthony is a graduate student at the University of Louisville working as a consortium fellow at the U.S. Army Research Institute's Armored Forces Research Unit.

14. ABSTRACT *(Maximum 200 words)*:

This report examined the Virtual Training Program's (VTP) strengths and weaknesses from the perspective of its original instructional team. These instructional personnel completed questionnaires and were interviewed regarding their opinions on various aspects of the VTP. Findings from the questionnaires and interviews provided further support for the VTP's instructional value. The participants indicated that unit leaders and units became more proficient during the course of their VTP rotation, and that this improvement was not simply a function of adapting to the Simulation Networking (SIMNET) terrain and equipment. Correspondingly, the participants had few problems with most aspects of the VTP.

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Theodore M. Shlechter, Ronald E. Kraemer,
David W. Bessemer, and Billy L. Burnside
U.S. Army Research Institute

James Anthony
University of Louisville

Armored Forces Research Unit
Barbara A. Black, Chief

U.S. Army Research Institute for the Behavioral and Social Sciences
5001 Eisenhower Avenue, Alexandria, Virginia 22333-5600

Office, Deputy Chief of Staff for Personnel
Department of the Army

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Training Systems and Education

FOREWORD

Army National Guard (ARNG) units have become an increasingly important element of post cold-war combat power. These units, however, have limited training resources and time with only 39 days allocated for training per year, including just 15 days for annual training (AT). Congress has thus provided funding for establishing the Virtual Training Program (VTP) at Fort Knox, KY with the intended goal of providing ARNG units with intensive, time-compressed training opportunities. Implementation of the VTP has been broadened to support the training of Active Component units.

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI), the Advanced Research Projects Agency (ARPA), the National Guard Bureau (NGB), and the U.S. Army Armor Center (USAARMC) and Fort Knox joined efforts (Memorandum of Agreement entitled "National Guard Armor Simulation Center," April 1993) to develop and implement the VTP. The ARI Armored Forces Research Unit at Fort Knox accomplished training research and development for the VTP through a contract effort entitled "Simulation-Based Multiechelon Training Program for Armor Units (SIMUTA)," as part of Research Task 2124, "Strategies for Training and Assessing Armor Commanders' Performance With Devices and Simulations (STRONGARM)."

The present research report examines the VTP's strengths and weaknesses from the perspective of its original instructional team. This examination involved having these instructional personnel complete questionnaires and be interviewed regarding their opinions on various aspects of the VTP. The information in this report has been provided to training developers and instructors in the 16th Cavalry Regiment at Fort Knox. It will also be useful to personnel involved in the development and implementation of structured simulation-based instructional programs for future simulation-based training systems, such as the Close Combat Tactical Trainer.

ZITA M. SIMUTIS
Deputy Director
(Science and Technology)

EDGAR M. JOHNSON
Director

PERSPECTIVES ON THE VIRTUAL TRAINING PROGRAM FROM MEMBERS OF ITS INITIAL OBSERVER/CONTROLLER TEAM

EXECUTIVE SUMMARY

Research Requirement:

Army National Guard (ARNG) units have become an increasingly important element of post cold-war combat power. ARNG soldiers must be trained for their new roles in the post cold-war military. To support the needed ARNG training, Congress has provided funding for establishing a Virtual Training Program (VTP), which utilizes the available training technologies at Fort Knox, KY, including the Simulation Networking (SIMNET) system. Implementation of the VTP has been broadened to support the training of Active Component units.

This research effort examined the opinions of the VTP's instructional personnel about various aspects of this program in order to ascertain the VTP's strengths and weaknesses. Correspondingly then, the data collected from this effort would help determine the need for making any changes to this program. This investigation's data would also help determine the value of incorporating aspects of the VTP into future instructional programs.

Procedure:

Twenty-nine members (6 officers, 8 non-commissioned officers--NCOs, 9 civilian, and 6 management personnel) of the VTP's instructional team participated in this investigation. The officers and NCOs primarily served as observer/controllers (O/Cs), while the civilians were the exercise controllers (ECs).

The participants completed self-administered questionnaires and structured interviews regarding their opinions about the following aspects of the VTP: (a) train the trainer, (b) unit preparation, (c) training structure, (d) training proficiency, and (e) unit follow-up and take-home packages (THPs). These two instruments also ascertained information about the participants' previous military experience and duties as an O/C or EC. The participants were also asked questions during their interview session about such matters as the: (a) criteria for selecting an O/C or EC, (b) beneficial and problematic aspects of the VTP, and (c) usefulness of structured instructional programs (e.g., the VTP) for simulation-based training systems.

Findings:

Findings from the questionnaires and interviews provided further support for the VTP's instructional value. The

participants indicated that unit leaders and units became more proficient during the course of their VTP rotation, and that this improvement was not simply a function of adapting to the SIMNET terrain and equipment. Correspondingly, the participants had few problems with most aspects of the VTP.

This report's findings also suggested the need for fine-tuning the VTP. Among the most notable suggestions made by the participants for fine-tuning the VTP were: (a) reorganizing the handbook for the O/C In-Charge, (b) standardizing the operations order narratives across echelons and to military doctrine, and (c) using afteraction review tapes to improve the THPs. The participants also noted that the units had to be better prepared for their VTP rotations.

Utilization of Findings:

This report has ramifications for military trainers and instructional designers. The utility of using structured instructional programs (e.g., the VTP) for simulation-based training systems has been further substantiated. Consequently, such instructional programs could be incorporated into the simulation-based training systems of the future, e.g., the Close Combat Tactical Trainer.

PERSPECTIVES ON THE VIRTUAL TRAINING PROGRAM FROM MEMBERS OF ITS INITIAL OBSERVER/CONTROLLER TEAM

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Perspectives on the Virtual Training Program From Members of Its Initial Observer/Controller Team

Introduction

This report examines the value of the Virtual Training Program (VTP) as viewed by members of the program's original observer/controller (O/C) team. This team, made up primarily of active duty military personnel, served as the program's instructional personnel from its implementation in early 1994 to the present time. Nearly all of the team's original military members rotated to other assignments during the summer of 1995. During that summer, these members of the O/C team were surveyed.

The VTP

Army National Guard (ARNG) units have become an increasingly important element of post cold-war combat power. These units, however, have limited training resources and time with only 39 days allocated for training per year, including just 15 days for annual training (AT). Congress has thus provided funding for establishing the VTP at Fort Knox, KY with the intended goal of providing ARNG units with intensive time-compressed training opportunities. Implementation of the VTP has been broadened to support the training of active component (AC) units.

The VTP instructional design and development processes were accomplished by the Simulation-Based Multiechelon Training Program for Armor Units (SIMUTA) contractor team, which consisted of a consortium of subject-matter experts (former military personnel), instructional designers, and evaluators. This contractual effort was monitored by the U.S. Army Research Institute's Armored Forces Research Unit at Fort Knox. (See Hoffman, Graves, Koger, Flynn, & Sever, 1995 for a detailed description of the SIMUTA project.)

Training Systems Associated With the VTP

Providing VTP participants with intensive time-compressed training involves the use of the Simulation Networking (SIMNET) and Janus training systems. Since the original O/C team directed a relatively few Janus training rotations, this report focuses on the VTP's SIMNET components.

SIMNET is used mainly to support platoon (PLT) and company (CO) training. It consists of the integrated use of training simulators with combat and combat support simulations operating under constraints similar to those found in battlefield conditions. SIMNET also employs the use of modified semi-automated forces (ModSAF), allowing computer generated vehicles (e.g., opposing forces) to operate on the SIMNET battlefield. (ModSAF is currently available in version 1.5 but VTP exercises have not been updated to this version.) SIMNET is thus considered to be a virtual training system.

In addition, the SIMNET facility contains 12 O/C workstations. Since a typical BN contains 12 PLTs, there is one O/C station per PLT. These stations include a plan view display (PVD; two-dimensional electronic map), tactical radios, stealth vehicle display (three-dimensional view of the virtual battlefield), and audiovisual recording and replay systems helping the O/Cs to perform their duties. The stealth vehicle, for example, provides a direct view of the battlefield from an invisible vehicle moving on or above the virtual terrain.

For more information about SIMNET, the reader is referred to the following sources (Garvey & Radgowski, 1988, Turecek, Campbell, Myers, & Garth, 1995). A more detailed description of the Janus systems is provided by Elliott and Sanders (1996).

The VTP's SIMNET Exercises (Tables)

Overview of the VTP tables. As indicated, the SIMNET portion of the VTP is geared toward PLT and CO training. Approximately one hundred PLT and CO training tables (a table is defined as a short structured training exercise) have been created, including three fundamental, nine offensive, and six defensive tables for each of the armor PLT, mechanized infantry PLT, armor CO, and armor CO team (CO TM). For the scout PLT, three fundamental, six offensive, and three defensive tables have been created. In addition, four fundamental, seven offensive, and four defensive tables have been created for the cavalry troop (CAV TRP).

These tables are based on two cornerstone BN missions (movement to contact and defense in sector) frequently executed at the National Training Center (NTC). The SIMNET PLT and CO tables have been designed to be nested within these two BN missions, allowing for multiechelon unit training. BN training exercises have also been created in SIMNET for these two missions. (Please note that the SIMUTA team did not refer to the BN exercises as tables.)

Description of the VTP PLT and CO tables. Each table consists of a preparation phase, an execution phase and an after action review (AAR), and is designed to be conducted in about two hours. The participating units should spend one half-hour on preparing for the mission, one hour on executing the mission, and another half-hour on participating in an AAR of the exercise. The times for the preparation and AAR may vary depending on the mission. The AAR process for a CO, for example, may last 45 minutes with 20 minutes being spent on an informal PLT AAR and 25 minutes on a more formal CO AAR. The former AARs include all members of the different PLTs within a CO; the latter AARs only include the CO commander, executive officer, PLT leaders, and tank commanders. (See Hoffman et al., 1995 for a more detailed description of the different training tables, and a description of the two BN missions.)

Structure of the VTP tables. A structured instructional program is not an inherent component of SIMNET. The effectiveness of previous SIMNET training programs has correspondingly been a function of the instructional techniques employed by instructors or unit leaders (Bessemer, 1991). Some units may then have benefited from SIMNET use while others may not have. The SIMUTA instructional design team thus had to develop a structured set of tables in order to maximize SIMNET's training capabilities for all units.

Structured simulation-based training is characterized by focusing on specific training objectives (Campbell, Campbell, Sanders, & Flynn, 1995). All VTP training tables have thus been designed so that units perform actions (critical subtasks) associated with specific training objectives (tasks) and cues. Examples of critical subtasks included: (a) reaching the starting point on time; (b) executing fires when the enemy crosses the trigger line; and (c) conducting displacement as directed.

"Turn-key" aspects of the VTP tables. Maximizing SIMNET's capabilities has also involved creating "turn-key" training tables, which entails preparation of a unit's training scenarios and associated support materials before participation in VTP training (Turecek et al., 1995). "Turn-key" tables thus involve providing the units with their operation orders, overlays and other planning materials before coming to the SIMNET facility. The VTP participants should then be able to focus on executing the training tables rather than on managing the training support, and they thus spend more time at the SIMNET facility on mission execution rather than on preparation and planning (Campbell et al., 1995).

The tables' "crawl-walk-run" (C-W-R) sequence. Based on Army training recommendations (Morrison & Holding, 1990), the VTP tables flow from the two cornerstone NTC BN missions in a C-W-R sequence of learning. A unit's later VTP tables are thus designed to be more difficult and demanding than their earlier ones. Regarding the latter point, table developers also instructed the original military members of the O/C team to provide less coaching/mentoring as the units progressed through the training tables.

Units should also face more challenging critical subtasks as they progress from the fundamental (mostly crawl) training tables to the more complicated offensive and defensive (mostly walk/run) tables. The offensive/defensive tables also include some repetition of fundamental critical subtasks, while the fundamental tables are designed to include some walk-level critical subtasks. The VTP participants should then have the opportunity to repeat training on selected subtasks. (The difficulty of the different critical subtasks was estimated by the SIMUTA team's military subject matter experts--Campbell et al., 1995).

The VTP's O/C Team

Overview of the O/C team. At the time data were collected for this report, the O/C team was staffed with 21 military O/Cs and 11 exercise controllers (ECs). The O/Cs were primarily AC personnel, ranging in rank from Lieutenant Colonel (O5) to Sergeant First Class (E7). The field-grade officers served primarily as O/Cs for the BN exercises; the CO-grade officers served primarily as O/Cs for CO and PLT tables; and the noncommissioned officers served primarily as O/Cs for the PLT tables. The ECs were civilian government employees who were also training analysts (TAs). The original group of O/Cs joined the VTP in late 1993 and early 1994, while the ECs joined the team in early to mid 1994. (Further demographic information about the original O/C team is found in the method section.)

The O/Cs' duties. The O/Cs have the following responsibilities associated with implementing the VTP:

1. Preparing VTP participants for their training by visiting them at their home-station (Unit Preparation). During such visits, the O/Cs provide the unit with all required training support materials, including overlays and operation orders, associated with completing VTP exercises. They also provide the unit with suggestive VTP preparation techniques, e.g., rock drills or rehearsals. In addition, the O/Cs supply the units with demonstration videos that introduce them to SIMNET and show exemplary units conducting successful VTP missions.

2. Providing units with a preview of each training table at the O/C workstation (Table Preview). This preview, which occurs during the time allocated for the preparation phase, involves giving the units an operation order, providing them with a quick overview of the battlefield situation, and answering their questions about the mission.

3. Monitoring execution of the VTP training tables. This responsibility involves role playing higher elements, e.g. a CO Commander for a PLT set of tables. It also involves providing feedback to the unit about their performance as they complete the tables.

4. Conducting the AARs. According to SIMUTA's instructional design, the O/Cs are supposed to conduct the AARs by following a a specific preplanned agenda. This agenda includes a discussion by the unit of its performance. The O/Cs have been instructed to facilitate this discussion through the use of discovery learning techniques and by using the workstation's apparati, e.g., the stealth vehicle display.

5. Completing the Take Home Packages (THPs). The THPs consist of the O/Cs' observations regarding units' performance during training. This package is sent to units at their home-stations following their participation at the VTP, and is used to assess

their future training needs (Turecek et al., 1994).

The O/Cs observe the participants' SIMNET performance and lead the AARs from their workstations. These stations include a plan view display (PVD; two-dimensional electronic map), tactical radios, stealth vehicle display (three-dimensional view of the virtual battlefield), and audiovisual recording and replay systems helping the O/Cs to perform their duties. The stealth vehicle, for example, provides a direct view of the battlefield from an invisible vehicle moving on or above the virtual terrain.

The ECs' duties. The ECs are primarily responsible for operating the O/C workstations, troubleshooting problems with the simulators, and assisting the O/C with conducting the VTP training. These duties involve: (a) initiating different scenarios, (b) monitoring the list of table events (master event list), (c) creating battlefield effects, (d) controlling indirect fires, and (e) coordinating the resolution of equipment problems with the appropriate SIMNET staff members. The ECs also assist the O/Cs by helping them prepare for the AARs and complete the THPs. The ECs must then be knowledgeable with regards to the training equipment and objectives.

Additional responsibilities of the O/C team. A few of the military personnel have functions other than those of an O/C, such as the field-grade officer who also functions as the Team Chief during a VTP rotation. During the BN missions, an EC acts as the controller for the opposing force (OPFOR). He directs the semi-automated OPFOR vehicles during the battle and gives the OPFOR portion of the AAR.

The ECs also: (a) operate the Janus workstations during BN staff exercises; (b) control the Janus exercises; and (c) observe the performance of the units' staff. The O/C team's military members serve as "interactors" (i.e., role-playing as unit personnel) during the Janus exercises (Hoffman et al., 1995).

The O/C team's training. The military members of the O/C team received training on being a VTP O/C in late 1993 and early 1994. This training included the SIMUTA team's giving a series of "workshops" on the: (a) instructional philosophy associated with the VTP; (b)home-station visits; (c) training tables; (d) O/C workstation, including the operation of the equipment; and (e) training support packages (TSPs). A course on facilitating the AARs was also given by an instructor from the U.S. Army Armor School. These O/Cs, additionally, received "hands-on training" from the SIMNET site staff on operating the workstations.

The O/C team personnel who joined the program after its initiation only received on-the-job training (OJT). Such training consisted of reviewing the relevant VTP training materials and being instructed by a more experienced member of the O/C team ("right-seating"; Hoffman et al., 1995). Hence, the

ECs received limited formal training on operating the SIMNET workstations and on supporting the Janus exercises.

The VTP's Training Management Tools

Overview of the training management tools. Exercise or training management tools are the VTP's final component. The purpose of these tools is to help the O/C team follow the instructional guidelines set forth under SIMUTA. The use of these materials would then *serve to standardize* the VTP process (Hoffman et al., 1995).

Two other points must be noted about the VTP's management tools. One, these tools are contained in a "Materials Library." Two, this library is comprised of a set of handbooks for each echelon with each set consisting of the volumes--except for the Familiarization (Fam) Course volume--that are summarized below.

Handbooks for the O/Cs and ECs. These handbooks have been designed to prescribe the basic scheme for: (a) planning the unit's rotation; (b) conducting the advance visits; (c) overseeing the units' table execution; (d) preparing the THPs; and (e) coordinating the training with the SIMNET staff.

Handbooks on O/C tools and reference materials. These materials include forms to record information about the different VTP missions completed by each element within an echelon and the elements' battle rosters. The PLT volume also contains separate sets of materials for the different types of PLTs.

Handbooks on the advance materials. These handbooks consist of: (a) instructions for unit preparation, (b) narratives of the different operation orders (OPORDs), and (c) descriptions of the different critical subtasks associated with each table. The PLT volumes also contain separate sets of OPORDS and table descriptions for the armor PLT tables, mechanized infantry PLT tables, and scout PLT tables.

Handbooks on the THP material. These handbooks contain information on the procedures for completing the THPs for each unit. These procedures include having the O/Cs indicate in the THPs those subtasks which units need either to "train to sustain" or "train to improve," representing satisfactory or unsatisfactory performance, respectively.

Fam Course manual. A Fam Course manual only exists for the PLT set of volumes as this course is designed to help crews become familiar with the SIMNET simulator modules and terrain database. This manual delineates the O/Cs' roles in this course as helping crews to: (a) locate the SIMNET switches and knobs; (b) navigate the SIMNET terrain database; (c) identify friendly and enemy vehicles in the SIMNET database; and (d) engage enemy vehicles with direct and indirect fire.

Handbooks for the Observer/Controller In Charge (OCIC). The materials in these handbooks include: (a) OPORD narratives; (b) execution guidance; (c) table preview structure; (d) AAR worksheets; (e) events guides for the OCIC; and (f) AAR guides. Each events guide delineates the OCIC's actions during a table. The PLT set of volumes also includes a separate OCIC handbook for the armor, mechanized infantry and scout PLTs.

Handbooks for the ECs. These handbooks contain the events guides to be used by the EC. They also include the SIMNET planning sheets, which are used by the EC for initiating vehicle and route specifications. Again, separate handbooks have been created for the different types of PLTs.

Review of the VTP's Components

As discussed, the VTP is a structured training program which includes use of: (a) the SIMNET and Janus training systems, (b) structured training exercises/tables; (c) the O/C team, and (d) a library of training support/management materials. Also, embedded into this program are procedures for preparing the units for their VTP rotation. However, a "formal program" for training new members of the O/C team had not been established at the time of data collection for this report (See Campbell et al., 1995; Hoffman et al., 1995.; and Turecek et al., 1995 for further information regarding these components.)

The VTP's Training Value

Instructional efficiency. Because of the VTP's training efficiency, PLT and CO participants have favorably received this program (Hoffman et al., 1995). Also, Bessemer, Shlechter, Nesselroade, and Anthony (1995) have noted that the VTP structured training is more efficient than some past SIMNET training programs. For instance, VTP participants have tended to complete two-to-three more SIMNET exercises during a given period of time than have participants in relatively unstructured training.

Instructional effectiveness. Shlechter, Bessemer, Nesselroade, and Anthony (1995) used a multimethod-multisource approach to provide empirical information regarding the VTP's instructional effectiveness. Trained observers collected data from nine units; fourteen VTP O/Cs completed standard rating forms regarding the performance of 38 armored force units; and 280 training participants completed Likert-scale items regarding their training experience. Data from the different sources showed that the units further developed their collective tactical skills across the training period. The observers found that the sampled units took significantly less time, made fewer errors, and needed less coaching as their training progressed. The instructors indicated that most units had a greater likelihood of getting more proficient in critical subtasks than either not improving or getting worse in them. And, the participants

claimed that they were more proficient after training than they were before training.

Potential problems with the VTP's training value. The VTP is seemingly then an efficient and effective instructional program. This conclusion, however, is tentative because direct comparisons of the VTP's efficiency and effectiveness with other training programs have not been conducted. Shlechter et al. (1995), for example, were not able to collect data on a control group of units who had gone through SIMNET training but not through the VTP. The improvement noted by Shlechter et al. (1995) could then have been partially a function of the participants' adapting to the SIMNET environment.

Also, Hoffman et al. (1995) have observed several potential limitations with the implemented VTP. First, the developed BN exercises were not fully linked with the PLT and CO tables, which correspondingly led to minor problems with conducting multiechelon training. Second, immersion vis-a-vis a constant mission may have been carried too far, at least for the units who completed the tables during their AT. These units claimed to be bored with the repetition of missions across echelons. (A PLT--CO-BN progression of missions was not implemented for the ARNG's week-end training drills, due to time limitations.) Third, the O/Cs--especially the newer ones--were not thoroughly trained with regards to incorporating "coaching" in relationship to the previously discussed C-W-R framework. Finally, the original O/C team should have been more heavily involved in the development process, thereby creating a product more suitable to the Army culture (VTP development was well underway when O/Cs began arriving).

Shlechter and Anthony (1996) have suggested another potential shortcoming with the VTP. They found that some ARNG units did not systematically view the VTP demonstration tapes, because of time constraints associated with their home-station training. In this and other regards, time constraints may limit units' opportunity to prepare fully for their VTP rotation(s).

Need to ascertain opinions of the O/Cs and ECs. As indicated, information about the VTP's training value was obtained from independent evaluators, its developmental team, and its training participants. Questions remain about the VTP's training value as viewed by its original set of instructional personnel. Examining these individuals' views would provide further insights into the following issues:

1. Do units and unit leaders become more proficient as the result of participation in the VTP?

2. Do problems--as suggested by Hoffman et al (1995)--exist with the VTP's structure and with the O/Cs' training?

3. Do problems exist--as suggested by Shlechter and Anthony

(1996)--with the unit preparation aspects of the VTP?

The O/Cs and ECs can also provide some unique insights into this program's strengths and weaknesses. They may have difficulty, for example, with developing the THPs. Or, they may not use some VTP materials because of factors that were not readily apparent to the developers. Given their high degree of experience with the VTP, these individuals can also provide valuable lessons learned for possible expansion of structured simulation-based training.

Objectives of This Evaluation

This investigation was thus designed to examine, systematically, the opinions of the VTP's instructional personnel about various aspects of this program. Information collected during this investigation should help answer questions about the VTP's training value, and correspondingly help determine the need for making any changes to this program. This investigation's data could also help guide the design and development of structured training for future training systems; e.g., the Close Combat Tactical Trainer (CCTT).

Method

Participants

The participants were 29 members (6 officers, 8 non-commissioned officers--NCOs, 9 civilian ECs and 6 management personnel) of the O/C team. The management personnel included 4 officers, 1 NCO, and 1 civilian. In addition, this sample consisted of 27 males and two females who were civilian ECs.

These participants were chosen because they had been with the O/C team for more than six months. All of the military participants had been associated with the VTP from October 1993 to Summer 1995. Nearly all of the civilian personnel had been with the VTP since January 1994. (See Appendix A for a listing of these participants' military experience and their experience as VTP O/Cs and/or ECs.)

Instruments

The instruments consisted of a structured interview form and a self-administered questionnaire. The development process for both instruments involved: (a) developing a draft outline of each instrument; (b) assigning individual authors to prepare specific sections; (c) reviewing the draft sections; (d) piloting the instruments; (e) rewriting any problematic sections; and (f) determining the procedures for administering the instruments.

The structured interview form. As shown in Appendix B, this instrument contains the following sections:

1. Demographic Information. This section contains questions about the participants' feelings on the: (a) value of their previous experiences in helping them to become an effective O/C or EC and (b) qualifications for being selected as an O/C or an EC.

2. Train the Trainer. This section consists of two parts. The first part contains questions about the participants' training to be a VTP O/C or EC. The second part deals with the participants' reasons for indicating on the self-administered questionnaire that they received either "too much" or "too little" training for the sampled VTP functions.

3. Unit Preparation. This section is comprised of three parts. Part 1 deals with the participants' responses to the self-administered questionnaire items on modifying, replacing, or deleting the different VTP preparation materials. Part two contains questions about: (a) the need for additional materials; (b) ways of better handling the advance visits; and (c) ways of encouraging units to be better prepared for a VTP rotation. The third part pertains to the participants' opinions about the demonstration tapes.

4. Training Management. This section contains three parts with each part pertaining to a different set of questionnaire items on this topic. Part I probes the participants' reasons for indicating on the self-administered questionnaire that the VTP components need to be modified, replaced, or deleted. Part II does the same for items dealing with the OCIC Handbook components. Both parts also contain a question about the need for developing additional components. Part III consists of questions about the allocation of time for the different VTP activities and about re-familiarizing units with the VTP.

5. Training Structure. Questions about the VTP tables' C-W-R framework are asked in this section. In addition, this section includes questions about the use of Mission Training Plan (MTP) subtasks and the AAR process.

6. Training Proficiency. This section asks the participants to identify the components of both leader performance and unit performance that increased the most and least during VTP rotations.

7. Unit Follow-Up and the THPs. Participants are quizzed in this section about: (a) tailoring the THPs for different units and levels within a unit; (b) changing the THP materials book; and (c) making it easier to produce the THPs. They are also asked to comment on the use of these materials by ARNG and AC personnel and the need for a dedicated staff of specialists (e.g., operations analysts, writers, graphic/media editors, etc.) to produce the THPs.

8. General Comments. This section contains questions about the

general lessons learned by the participants about the VTP and structured training. The participants are also questioned about the use of the VTP for future virtual training devices, e.g. the CCTT.

The self-administered questionnaire. This instrument, which can be found in Appendix C, contains the following sections:

1. Demographic Information. This section contains nine open-ended items dealing with the respondents': (a) military experience, including previous O/C and EC experience and (b) experiences with the VTP's O/C team.

2. Train the Trainer. This section consists of two sets of Likert-scale items. For Set 1, respondents are to indicate the perceived quality of their O/C or EC training; while for Set 2, they are to rate the amount of training for various VTP duties.

3. Unit Preparation. This section is comprised of five Likert-scale items dealing with the: (a) effectiveness of various VTP materials; (b) importance of advance visits by the O/Cs to the unit's home-stations; (c) percentage of units adequately prepared for their VTP training; and (d) effectiveness and utility of the demonstration tapes.

4. Training Management. This section consists of three Likert-scale items in which participants are to indicate their opinions about the: (a) different TSP components; (b) format of the OCIC Handbook's components; and (c) allotted time for the various SIMNET activities.

5. Training Structure. This section contains seven Likert-scale items dealing with such aspects of the VTP's training structure as the utlility of: (a) the stealth preview for aiding the units' ability to conduct the tables; (b) of subtask repetition in helping the units to improve their performance; and (c) of the AAR aids in helping the units to discuss their performance.

6. Training Proficiency. This section requires respondents to estimate on a numerical scale from 0-100% the levels of performance for a typical unit leader and unit at the start and end of a VTP rotation. The respondents are then to use the following scale--0-25%, 26-50%, 51-75%, 76-100%--to estimate the percent of unit improvement that is a function of coaching provided by their O/C and adapting to SIMNET.

7. Unit Follow-up and the THPs. This section consists of five items dealing with such issues as: (a) identifying the groups (e.g., crews or squads) within each unit level (e.g., PLTs) who should have feedback materials incorporated into their THPs; (b) determining the effort involved in producing a THP; and (c) ascertaining the perceived usefulness of the THP materials. Likert-scale and open-ended items were used to examine these issues.

Procedure

Each participant completed the self-administered questionnaire and was interviewed during one two-hour session. Three Armored Forces Research Unit (AFRU) personnel--two research psychologists and a graduate student intern--conducted these sessions with the stipulation that two of them be present at a session.

At the beginning of each session, the participant was informed about the purpose of this investigation and the specific procedures that would be followed. He/she was also given the opportunity to ask any questions about this investigation. The participant then read and signed the consent form that was attached to the questionnaire. Also, each session took place at a private area in the AFRU. Hence, ethical guidelines prescribed by the Army Research Institute and the American Psychological Association were followed during this data collection process.

The participant then completed the self-administered questionnaire without any distractions or interruptions from the AFRU personnel. After approximately twenty minutes, the AFRU personnel went over the questionnaire with the participant to see if he/she had any problems with completing it. The AFRU personnel also checked to see if the participants had answered as many questions as possible. Because of their duty position, some participants might not have been able to answer all the questions.

After a short break, each participant was then interviewed for approximately ninety minutes. The lead interviewer asked each question as it was stated on the interview form, while the second AFRU person took notes and asked the participant to elaborate upon some of his/her answers. The lead interviewer also recorded the participant's responses onto an interview form. In addition, each interview was tape-recorded with the participants' permission. After the interview was completed, the participant was thanked for his/her participation and allowed to return to his/her regular duties.

Scoring and Data Analyses

Interview data. Three judges--the AFRU personnel who interviewed the participants--scored and analyzed these data by using the following scheme:

1. The lead interviewer recorded onto a master scoring sheet a paraphrased account of the participant's response(s) to a question. If another participant had made a similar response, the lead interviewer then put a tick mark by the "original response."

2. The assistant interviewer reviewed the notations made by the lead interviewer.

3. Discrepancies between judges were resolved by discussing their differences and listening to the tapes.

4. All three judges, independently, conducted a content analysis of each item with the stipulation that a response category consisted of three or more similar responses. Those responses which could not be included into a distinct response category were categorized as "other" responses.

5. The three judges met to reach a consensus on the: (a) response categories and (b) number of responses per category.

(See Appendix E for a discussion of the data analyses associated with the questionnaire items.)

Results and Discussion

This part of the report contains sections on: (a) demographic information; (b) train the trainer; (c) unit preparation; (d) training management; (e) training structure; (f) training proficiency; (g) unit follow-up and THPs; and (h) general comments. These topics, excluding the sections on demographic information and general comments, are further segmented by the participants' interview responses and questionnaire data. Those two sections consist only of the participants' interview responses.

Demographic Information

These data, (see item set A of Appendix D[1]), indicated the importance of O/C team members' having previous military field experience. Such experience was the most frequently mentioned criterion for selecting a VTP O/C and an EC, accounting for 43% (18/42) of the responses regarding the criteria for O/C and/or EC selection. It was also cited as the most helpful experience to these participants in their role as an O/C or EC. For example, a participant noted that being the Chief of Simulation at Fort Knox was great preparation for his duties as a member of the O/C team.

Several other salient findings surfaced from the participants' responses to these items. These participants claimed, for one thing, that O/Cs should have: (a)[2] been an instructor; (b) received training at the NTC, and (c) previously operated computers. In addition, proper schooling was an

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[1] Results for the structured interviews are presented in Appendix D. Text notation in the text refers to the numbering scheme found in this Appendix.

[2] Sentence seriation--throughout the results and discussion section--is based upon the percentage of the item's responses for that category. More comments were thus found for "being an instructor" than for the two other cited response categories.

important criterion for selecting an O/C, accounting for 29% (12/42) of the items on selecting O/Cs. Finally, tactical knowledge and computer skills were a particular concern for selecting ECs as manifested by these categories representing 51% (28/55) of the responses to the item on selecting ECs.

Train the Trainer

Interview data. The participants' responses to these items indicated the following about their training to be a VTP O/C or EC:

1. Their training was, at least, adequate. This point was manifested by the relatively high percentage of participants (36% or 12/33) who believed that they did not need any additional training (see B-4). In addition, 29% (9/31) of them felt that all of their training time was well spent (see B-3)

2. The two most prominent types of training received by the participants involved using the SIMNET or Janus workstations/equipment and doing an AAR, with comments about using the workstation accounting for 50% (22/44) of the responses to the item on types of training received (see B-1).

3. The participants indicated that their training on using the workstations/equipment was the most helpful part of their O/C or EC training. This response category represented 44% (15/34) of the responses to the item on the most helpful aspects of O/C or EC training. Also, 24% (8/34) of the comments on the helpful aspects of their training concerned the training on doing an AAR. (See B-2 for the data cited in this paragraph.)

4. Ironically enough, the participants also felt that they needed more training on using the workstations/equipment and doing an AAR. As presented in B-4, these categories accounted for 36% (12/33) of the responses to the item on training not provided.

5. Several participants correspondingly expressed a need for more hands-on training in using the SIMNET and Janus workstations. These comments were made by participants when asked to provide reason(s) for claiming on the questionnaire that they received too little training time on learning how to operate these pieces of equipment (see B-7b).

6. As presented in B-3, 59% (13/22) of the comments regarding the least helpful aspects of training dealt with the "instructional program" provided by the contracting team; i.e., training on the workstation or on the Unit Performance Assessment System (UPAS-see Meliza, Bessemer, & Tan, 1994 for a description of this system), and AAR. (The denominator 22 comes from subtracting 9, the number of the "none responses," from the data.)

The participants also had the following opinions about training future VTP O/Cs and ECs:

1. Future members of the O/C team should complete a formal certification program and/or be tutored by a senior O/C or EC. This point was indicated by 71% (22/31) of the responses to the item on training future O/Cs (see B-5).

2. Unit personnel can be trained to perform the duties of an O/C or EC. Nearly two-thirds (19/29) of the participants made this assertion (see B-6).

3. Unit personnel would need intensive training with: (a) having the requisite technical skills for operating the SIMNET equipment; (b) being objective; (c) doing a quality job; and (d) being efficient. Such concerns were voiced by participants regardless of their belief about whether or not unit personnel could be trained to perform the duties of an O/C or EC. (These findings are detailed in B-6b and B-6c.)

4. Two notable strategies for training unit personnel to overcome the noted deficiencies would be to have them: (a) complete a formal certification program and (b) receive OJT with experienced and dedicated O/C personnel. These recommendations, however, were based on a limited number of comments (see B-6a).

Questionnaire data. The data for these items, which can be found in Appendix F, provided support for following observations made in relationship to the corresponding interview data:

1. O/Cs' training was at least adequate. Eighty-two percent of them claimed that their training was either good or very good. Also, over a majority of participants felt that their training for the different types of duties (e.g., SIMNET tables) was about right. However, the data for this latter finding were only significant for operating SIMNET workstations and conducting SIMNET tables (see Table F-3).

2. A relatively low percentage of participants felt that the amount of training time was about right for conducting advance visits, especially vis-a-vis the training time for controlling the SIMNET exercises (see Tables F-3 and F-4). As a participant noted: "(SIMUTA) training did not focus on preparing him for unit visits."

Unit Preparation

Interview data. The most prominent findings from these data were as follows:

1. As presented in C-1, participants were nearly equally divided about the need for any additional advance materials. Forty-eight percent (14/29) of the participants thought that additional

materials were not needed; while 45% (13/29) thought that additional materials were needed.

2. Participants tended to believe that the procedures associated with advance visits and unit coordination could be improved. This point was manifested by 58% (19/33) of the responses to the item on better ways for handling unit visits, although approximately one-quarter (8/33) of the participants did note the importance of continuing the face-to-face interactions with the units. (This paragraph's data can be found in C-2.)

3. The most cited procedures for improving units visits were: (a) having more time for unit visits; (b) getting the unit leadership more involved; and (c) providing better distribution of materials to the units (see C-2).

4. The participants were concerned about units' lack of systematic planning and preparation for their VTP rotation. This category accounted for nearly 40% (13/34) of the comments on ways to improve units' VTP preparation (see C-3).

5. A consensus was not reached regarding the quality of the developed demonstration tapes (see C-4). Forty-eight percent (14/29) of the participants believed that the demonstration tapes were fine. The remaining 52% made the following comments on ways of improving these tapes: (a) have more tapes; (b) make the tapes more detailed; and (c) have more cues on the tapes. The last suggestion was based on a limited number of responses.

6. The two most salient suggestions for improving use of these tapes involved: (a) having units systematically review them and (b) disseminating tapes to all unit levels. These findings parallel those found in Shlechter and Anthony's (1996) interviews of VTP participants. The participants also suggested that the tapes be used during the AARs. (Findings cited in the paragraph refer to the data presented in C-5).

Questionnaire data. The pertinent data associated with these items can be found in Appendix G. These data revealed the following additional information about participants' opinions on unit preparation:

1. The orientation guides and demonstration tapes were fine as more than 70% of the participants found them to be adequate.

2. The orders and overlays were problematic. Sixty percent of the participants wanted these materials to be modified or replaced. In addition, nearly half of the participants stated, during their interviews, that the overlays and orders needed to be modified in order to be error-free and conform to Army doctrine (See C-6a for an account of these comments.)

3. Management personnel, however, were the most likely to have problems with the different unit preparation materials.

4. The O/Cs' advance visits were very important. This item had a mean score of 3.64 with 4 as "very important."

5. The demonstration tapes effectively prepared the units for their VTP rotation. These materials received a mean score of 4.00 with 4 as "good" on emphasizing VTP tasks, and they received a mean score of 2.86 with 3 as "useful" on helping units go through more training tables during their VTP rotation.

6. Units were not prepared for their VTP rotations. That is, the majority of participants felt that fewer than 50% of the VTP units were properly prepared.

Training Management

Since nearly all of these interview and questionnaire items are complementary, they are discussed jointly. The following findings emerged from these data regarding the TSP materials:

1. The participants had mixed feelings about these materials. While the participants clearly indicated on their questionnaires that the Fam course was good as designed; their feelings about the other TSP materials were not as clear (see Appendix H). Also, as shown in D-3d, fewer than 40% (11/29) of them believed that the TSP did not need any additional components. The participants, correspondingly, noted the need for user manuals for the SIMNET workstations and Janus, a short orientation course, and training aids (see D-3d).

2. The organization of the TSP materials seemed to be problematic. Reorganizing the materials was the prevalent reason given for modifying the Tools and Reference Materials, OCIC Handbook, and the EC Handbook (see D-3a).

3. The participants were generally satisfied with the different components of the OCIC handbook. A significant proportion of participants indicated on the questionnaires that the Execution Guidance, Table Preview, Event Guides, and AAR Guides were good. In addition, 66% (19/29) of the participants stated that the OCIC handbook did not need any additional components (see D-4d).

4. As discussed for unit preparation, the OPORD narratives could be modified by making them more doctrinally correct and by eliminating other errors in them (see D-4a).

The following findings have also surfaced regarding training management issues:

1. The questionnaire data showed that the time available for most SIMNET activities was about right. Over 60% of the participants made this assertion for the Fam Course, Table Previews, Table Execution, and for preparing and conducting the AARs. However, the proportion of "about right" responses was not

significantly different from 50% for the Fam course and the AARs for PLT AARs during CO exercises.

2. However, when interviewed, nearly 72% (21/29) of the respondents stated that changes should be made to the allocation of time for the different VTP activities. The most cited change involved making the time for AARs more flexible. (These findings are delineated in D-1 and D-1a.)

3. Making the AAR time more flexible was also noted by several participants in reference to their reason(s) for indicating on the questionnaire that too little time was spent on the AARs (see D-5b).

4. A consensus was not obtained regarding the importance of having units repeat the Fam course upon return trips to the VTP. Thirty-five percent (11/31) of the responses to this interview item concerned the importance of always taking the Fam course; 26% (8/31) noted the relationship between taking the Fam course and the degree of turbulence within the unit; 23% (7/31) indicated that taking the Fam course depended upon the time between VTP rotations. (These data can be found in D-2.)

5. Further evidence was provided about the lack of preparation by the units for their VTP rotations. Problems with unit preparation was the most noted reason given by participants for claiming on the questionnaire that too little time was spent during the VTP on troop leading procedures (see D-5b).

Training Structure

Interview data. These data demonstrated the following:

1. The participants had few problems with the basic arrangement of the VTP tables. Ninety percent (26/29) of them thought that there was adequate task overlap and repetition among the VTP tables and that the VTP tables did tend to increase in difficulty (see E-6 and E-1). Sixty-six percent (19/29) of them, consequently, felt that the order of the tables was fine. This last finding is manifested by the "no" responses to item E-3.

2. They, however, expressed some concern about the arrangement of the PLT tables. Thirty-one percent (9/29) of the comments to these items dealt with the fundamental tables being difficult for the VTP participants to complete than the offensive/defensive tables. In addition, six comments were about the PLT tables being harder than the CO tables. (See E-2 for account of the findings cited in this paragraph).

3. Questions remain about adding more tasks or subtasks to the VTP tables. As shown in E-4, forty-eight percent (14/29) of the participants did not believe that any MTP tasks or subtasks should be added to the VTP tables; while 41% (12/29) felt that some MTP tasks (e.g., movement techniques or formations--see E-

4a) should be added. Also, 52% (15/29) of the participants wanted the VTP tables to contain other critical tasks or subtasks; while 41% (12/29) did not feel that any other critical tasks or subtasks should be added to the VTP tables (see E-5).

4. The AAR agenda seemed to be appropriate. This claim was made by 62% (18/29) of the participants (see E-7).

5. However, as discussed for the Training Management data, participants wanted more leeway in conducting the AARs. This point was noted by participants who wanted to make changes to the AAR agenda (See E-7a).

6. The participants indicated that the stealth display with voice, and the events' poster were the two most useful AAR aids. They also thought that their AARs could be improved with the addition of UPAS, bigger/wider PVD screen, visual aids, and ModSAF 1.5. (The data associated with this paragraph's findings are presented in E-8 and E-9).

Questionnaire data. These data, as presented in Appendix I, showed that nearly all of these participants either agreed or strongly agreed with the questionnaire statements dealing with the VTP's structure. The following statements can then be made about these findings:

1. The VTP's instructional personnel did feel that the training tables were progressively more difficult.

2. The stealth preview and AARs were valuable instructional tools.

3. The AARs, correspondingly, did promote discovery learning by the VTP participants.

4. The VTP participants' performance was aided by such VTP design features as subtask repetition and the progression in difficulty of the VTP tables (The ECs tended to have stronger feelings about the value of subtask repetition than did the other respondents).

Training Proficiency

Interview data. These participants indicated the following opinions about the effectiveness of the VTP for training unit leaders and elements:

1. The VTP was most effective in helping unit leaders to become better able to command and control their elements. This category accounted for 56% (19/34) of the responses to the item dealing with improvements in leader performance (see F-1).

2. As also shown in F-1, this program was also noted for helping foster positive changes within the unit leaders. Forty-one

percent (14/34) of the responses to the item cited above concerned improvements in the unit leaders' situational awareness (of the battlefield) and self-confidence.

3. The VTP had the least impact on helping unit leaders to understand the importance of conducting troop-leading procedures and delegating authority to subordinates. The BN leaders were the focus of the latter criticism. (Data associated with these findings are presented in F-2.)

4. Units became more proficient with regards to reporting (27% or 12/45), conducting actions on contact (24% or 11/45), conducting formations (22% or 10/45), and being a cohesive fighting force (20% or 9/45). Each of these categories represented approximately 20% (9/44) of the responses to the item dealing with improvements in unit performance (see F-3).

5. The units' situational awareness, gunnery abilities, defensive tactics, and cross-talk skills improved the least. These categories accounted for 67% (22/33)of the comments on the item regarding aspects of unit performance that increased the least (see F-4).

Questionnaire data. The following points were deduced from the information presented in Figures 1 and 2. (Numerical values associated with these figures are detailed in Appendix J.)

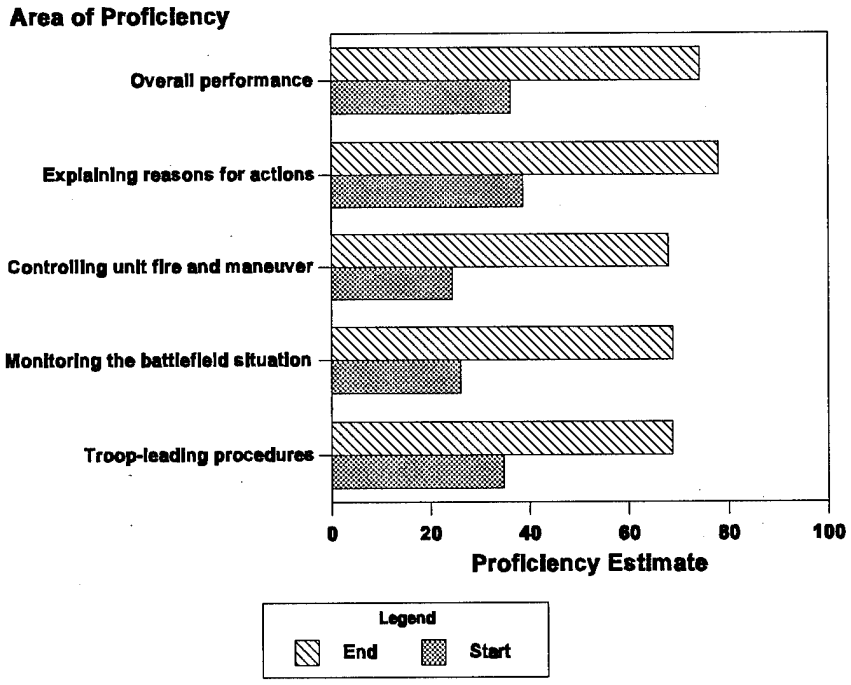

Figure 1. Estimates of leader proficiency before and after training in the VTP.

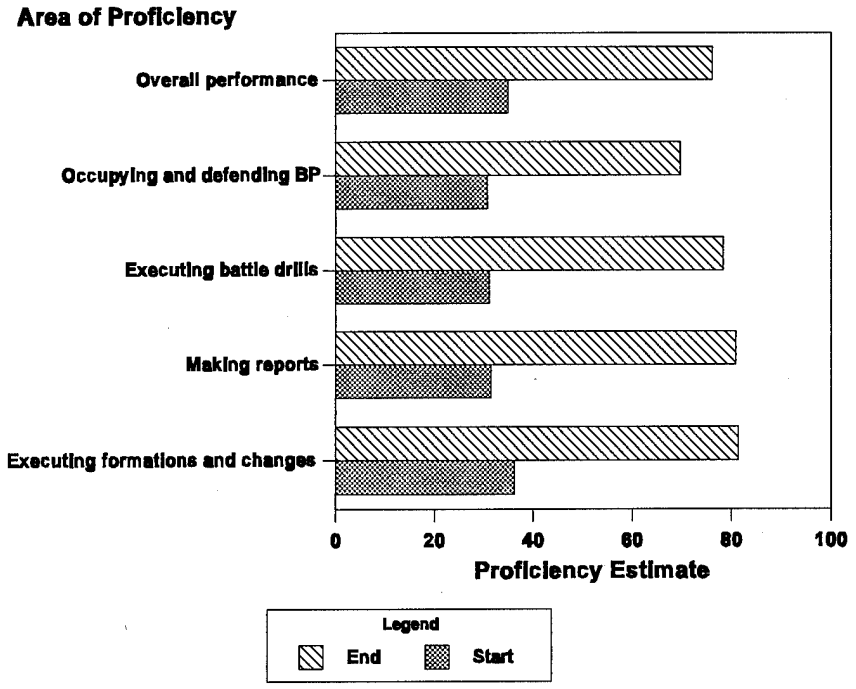

Figure 2. Estimates of unit proficiency before and after training in the VTP.

1. This program was quite effective for training unit leaders and units. The participants indicated that both unit leaders and units progressed from proficiency levels of approximately 30% to those around 70% for leaders and 80% for units. These reported differences between the participants' starting and ending levels of proficiency were statistically significant (see Appendix J).

2. Support was provided for the interview data's findings regarding the most effective and least effective aspects of the VTP. Estimates of the unit leaders' proficiency increased the most for command and control (controlling unit fire and maneuver) and situational awareness (monitoring the battlefield situation) with approximately 43% increases for both. These estimates increased the least for troop-leading procedures with a 33.90% increase. In addition, the estimates of unit performance increased the most for reporting and the least for defensive tactics; i.e., occupying and defending battle positions. (See Tables J-2 and J-3 for a more detailed account of these results.)

3. Coaching by the VTP instructional personnel was an important factor in this program's instructional effectiveness. Nearly three-quarters of these participants thought that more than 51% of unit improvement was a function of this factor.

4. Unit improvement was seemingly not an artifact of units' becoming more acclimated to either the SIMNET terrain or equipment. Approximately 70% of the participants thought that less than 50% of unit improvement was a function of these factors. Management personnel were the least likely to think that unit improvement was a function of adapting to SIMNET's equipment and terrain.

Unit Follow-up and THP Materials

Interview data. These data indicated the following about unit follow-up and THP materials as viewed by VTP instructional personnel:

1. The THP memorandum and matrices should be tailored for different types of units. This opinion was voiced by 59% (17/29) of the participants (see G-1).

2. Additional materials besides the THP memorandum and matrices were not needed for the crews and squads. This assertion was made by nearly all of the respondents (see G-1a, G-1b- & G-1c).

3. Different types of exercises needed different types of additional THP materials. For example, a few respondents expressed a need for the THPs associated with PLT exercises to consist of: (a) checklists rather than matrix; (b) UPAS performance data; and (c) tapes of unit performance. (Data associated with these findings can be found in G-2).

4. The participants stated that the ARNG units should use the THP at their home-station to: (a) focus on tasks needing training; (b) plan and prepare for future home-station activities; (c) crosswalk with unit Mission Essential Task List (METL); and (d) follow FM 25-100/101 (U.S. Department of the Army, 1988; 1990). As presented in G-3, the first two categories accounted for 64% (23/36) of the responses to the item on home-station use of the THPs with the first category accounting for 39% (14/36) of the responses.

5. AC units should also use the THP materials as described above. Ninety percent (26/29) of the respondents made this claim (see G-4).

6. A clear answer was not provided for making changes to the THP materials book. As presented in G-5, 31% (9/29) of the respondents thought that this book should not be changed; while 31% (9/29) thought that it should include additional materials; e.g., demonstration tapes. The remaining participants thought that the book should be modified (14% or 4/29), replaced (10% or 3/29), deleted (3% or 1/29), or were not sure about what to do with these books (10% or 3/29). Modifications to these books primarily involved eliminating redundant materials, and using AAR tapes was noted as the way of replacing the books (see G-5a).

7. The use of AAR tapes would also increase the quality of the produced THPs. This comment accounted for 47% (17/36) of the responses regarding improving the THPs. Use of automated processes (e.g., laptop computers) was another prominently mentioned way of improving the THPs, representing 31% (11/36) of the responses to the item on improving the quality of the THPs. (This paragraph's data are presented in G-6.)

8. Automated tools for O/Cs would make it easier for the O/Cs to produce the THPs. This point accounted for 57% (21/37) of the responses to the item on facilitating the THP process. Also mentioned was the need to standardize the process of producing the THPs. (See G-7 for the data cited in this paragraph.)

9. The participants were split on needing a dedicated staff of operations analysts, graphic editors, etc. to produce the THPs. Forty-eight percent (14/29) of the participants indicated a need for such a staff; while 41% (12/29) felt the opposite. The remaining 10% (3/29) were not sure about the need for having a dedicated staff to produce the THPs. (This paragraph's data can be found in G-8.)

Questionnaire data. The following information about the THP materials were obtained from these data (see Appendix K):

1. Members of the O/C team typically produced 21 THPs with a typical officer and NCO completing 45.5 and 25.21 THPs, respectively. Statistical differences (see Table K-1) were found with regards to the numbers of PLT and CO THPs produced by the different types of participants with the officers completing the most PLT and CO THPs.

2. On the average, a THP took approximately 2.5 hours for the O/C instructional personnel to complete. The O/C instructional personnel took approximately the same amount of time to complete the THPs for the PLT, CO, and BN tables.

3. A significant number of participants felt that the THP feedback should be given to: (a) crews/squads for PLT tables but not for BN tables; (b) vehicle commanders for PLT tables; (c) CO commanders for CO and BN tables; and (d) BN staff members and next higher HQ for BN tables but not for PLT tables.

4. These participants had positive feelings about the procedures associated with producing the THPs. Over two-thirds of them indicated that producing a THP was either easy or very easy and that the THP materials book was either useful or very useful in helping them to produce a THP.

5. High quality THPs were apparently produced. Approximately 85% of the participants felt that they produced either good or very good THPs. (The data reported for points 4 and 5 were statistically significant.)

General Comments

The final set of interview questions indicated the following about the participants' views toward the VTP:

1. The VTP's cost-effectiveness, structured design, and AAR feedback system were the three most beneficial aspects of this program. These three response categories accounted for 91% (70/83) of the participants' comments regarding the most beneficial aspects of this program (see H-1a to H-1c).

2. The three most problematic aspects of this program involved: (a) aspects of the VTP's hardware/software; (b) lack of standardization across echelon with such items as the overlays and orders; and (c) aspects of the training development process. These three items represented 84% (67/80) of the comments on the item dealing with needed modifications to the VTP (see H-2a to H-2c).

3. Regarding the issue of standardizing the OPORDs, the participants also had problems with the narrative format for presenting this information. OPORDs are typically presented in a paragraph format with each paragraph delineating another aspect of the mission.

4. Use of structured training and increased knowledge of military operations and doctrine were the two most mentioned lessons learned by these participants. These two categories accounted for 59% (17/29) of stated lessons learned by these participants (see H-3).

5. Nearly 80% (23/29) of the participants thought that both ARNG and AC units could benefit from the VTP. A primary reason stated for this belief was that both ARNG and AC units faced operating tempo constraints (see H-4).

6. Seventy-two percent (21/29) of the participants believed that structured training should be developed for mission planning and preparation and for future simulation systems, e.g., the CCTT. Regarding the CCTT system, 12 participants cautioned that the VTP's instructional content must be tailored to the CCTT capabilities. (Data presented in this paragraph relate to those described in H-5 and H-5a)

7. The participants' positive feelings toward the VTP were finally manifested in their responses to the last interview question. Sixty-nine percent (20/29) of them made positive comments about the VTP, while the remaining 31% (9/29) thought that some aspects of the VTP should have been designed differently. Regarding the latter, problems were noted with the SIMUTA instructional design team. As mentioned by one participant, "(L)ots of promises by the SIMUTA folks which just weren't delivered."

Conclusions

This investigation has provided further support for the VTP's instructional value. As discussed, these VTP instructional personnel believed that unit leaders and units became more proficient during the course of their VTP rotation. Both units and unit leaders seemingly improved from a novice level, i.e., approximately 35% mastery level) to an intermediate level of tactical proficiency; i.e., approximately 75% mastery level . This improvement was apparently not a function of VTP participants' becoming more acclimated to either the SIMNET terrain or equipment. The VTP is then an effective program for training ARNG and AC units to become more tactically proficient. In addition, this program has been noted by these VTP instructional personnel as being cost-effective. One O/C declared: "It (the VTP) pays off. Wish I had it when I was a CO commander."

The participants, correspondingly, had few problems with most aspects of the VTP. They felt that the tables did progress in difficulty, and that this progression helped to make the VTP an effective instructional program. Also, these O/Cs and ECs seemed to be satisfied with their training to be an O/C or EC and with most of the instructional materials associated with the VTP.

However, these participants suggested fine-tuning the VTP. They especially noted the need to: (a) reorganize the OCIC handbook, (b) standardize the OPORD narratives across echelons and to military doctrine; (c) use the AAR tapes to improve the THPs; (d) allow the O/Cs to have more flexibility in preparing for and conducting the AARS; (e) have more hands-on training on using the SIMNET and Janus equipment; and (e) eliminate duplication among the VTP training support materials. These VTP instructional personnel also claimed that the typical unit is not prepared for their VTP training. Perhaps then, as suggested by Shlechter and Anthony (1996), a structured instructional program is needed for helping units prepare for their VTP rotation.

Some of the problems listed above may have been rectified by the current O/C team. In reviewing this report, a current VTP O/C has noted that units coming to the VTP during the Winter months of 1996 are distinctly more prepared for their VTP rotation than those coming prior to this period. This improvement has been attributable to a structured workshop for helping VTP participants prepare for their VTP rotations, which has recently been developed by the O/C team. A certification course has also recently been developed by the O/C team for training new personnel.

This investigation's data also have ramifications for future use of the VTP and other similar structured instructional programs for simulation-based training systems. One ramification is that unit personnel, in case of resource constraints, can possibly be trained to be a VTP O/C. However, as stressed by the

participants, this option should be used as a last resort and only after the unit personnel have been thoroughly trained to be an O/C.

Another ramification is that VTP-like instructional programs should be developed for the training systems of the future; e.g., the CCTT. Such future generations of the VTP should, of course, be tailored to meet the capabilities of the future training systems. This development should also involve a close relationship between the user and the instructional design team. And, this development can be enhanced vis-a-vis the lessons learned by this investigation's participants, who were the first generation of VTP instructors.

In closing, the VTP, despite its minor flaws, was a rewarding experience for the sampled instructional personnel. As noted by an O/C:

"Professionally, the VTP was the most rewarding experience that I have had with regards to people & outcomes...."

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Appendix A

The Assessed Demographic Information

Table A-1

Self-reported Years in Service, MOS and Prior O/C Experiences

	OFFICERS (N=6)	NCOs (N=8)	CIVILIAN PERSONNEL (N=9)	MANAGEMENT PERSONNEL (N=6)[a]
Years in Service				
M[b]	11.91	15.40	18.68	17.50
SD[c]	2.47	2.29	7.44	4.28
	(n=6)[d]	(n=8)	(n=8)	(n=6)
Years in SC/MOS				
M	11.08	15.00	20.42	16.08
SD	1.80	2.29	4.09	5.83
	(n=6)	(n=8)	(n=6)	(n=6)
Years of Prior O/C Experience				
M	1.50	3.50	0.75	1.50
SD	0.87	0	0.35	0.99
	(n=3)	(n=1)	(n=2)	(n=3)

[a]The management personnel consisted of 4 officers, 1 NCO, and 1 civilian, who were not included in the other three groups. [b]M = mean. [c]SD = standard deviation. [d]Number of respondents by group for that item.

Table A-2

Self-Reported Number of Rotations as an O/C and EC[a]

	OFFICERS (N=6)	NCOs (N=8)	CIVILIAN PERSONNEL (N=9)	MANAGEMENT PERSONNEL (N=6)
O/C Rotations				
PLT/CO				
M	106.33	49.00	2.00	6.00
SD	59.20	25.69	2.00	6.78
	(n=6)[a]	(n=8)	(n=1)	(n=4)
BN				
M	16.50	13.75	0	20.00
SD	6.89	4.79	0	11.55
	(n=6)	(n=4)	(n=0)	(n=4)
Janus				
M	12.67	12.17	5.00	15.00
SD	7.20	6.15	0	12.20
	(n=6)	(n=4)	(n=2)	(n=6)
EC Rotations				
PLT/CO				
M	5.00	25.86	48.78	5.80
SD	3.46	18.71	28.49	6.83
	(n=4)	(n=7)	(n=9)	(n=5)
BN				
M	0	0	9.11	20.00
SD	0	0	8.31	17.67
	(n=0)	(n=0)	(n=9)	(n=3)
Janus				
M	7.25	9.29	14.00	9.00
SD	6.55	8.38	9.83	14.00
	(n=4)	(n=7)	(n=8)	(n=4)

[a]Number of respondents by group for that item.

Appendix B

Structured Interview Form

Demographic Information Interview _____

6a. What previous experience was most helpful to you in your role as an O/C (EC)?

_____

6b. In addition to O/C experience, what other qualifications are important for selecting VTP O/Cs? _____

_____

6c. What qualifications are important for selecting ECs? _____

_____

_____

_____

Train the Trainer Interview _____

1a. Briefly describe the training you received for your role as an O/C or EC? _____

_____

_____

1b. What parts of your training proved to be most helpful? _____

_____

1c. What parts of your training proved to be least helpful? _____

_____

1d. Did you need any training that was not provided? _____

_____

1e. Do you have any suggestions for how future O/Cs and ECs should be trained?

_____

_____

1f. Dedicated O/Cs and ECs may not be available in future programs like the VTP. Can unit personnel be trained to perform these duties? If yes, what training will be needed?

_____

2a. Why was the training"Too Much" for those duties you checked? _____

_____

2b. Why was the training "Too Little" for those duties you checked?

Unit Preparation Interview _____

1a. You indicated that _____ should be modified. Please describe how you think it should be modified.

Orientation Guide _____

Orders and Overlays _____

Demonstration Tapes _____

1b. You indicated that _____ should be replaced. Please describe what you think the replacement should be.

Orientation Guide _____

Orders and Overlays _____

Demonstration Tapes _____

1c. Why should _____ be deleted? _____

1d. What additional advance materials are needed? _____

_____

2. Do you have any suggestions for better ways to handle advance visits and unit coordination? _____

3. Do you have any suggestions on how to encourage units to better prepare for a VTP rotation? _____

_____

4. How could the Demonstration Tapes be improved? _____

_____

5. Do you have any suggestions for better ways to use the Demonstration Tapes?

_____

Training Management Interview _____

1a. You indicated that _____ in the TSP should be modified. Please describe how you think it should be modified.

Familiarization Course _____

Observer/Controller Handbook _____

Tools and Reference Materials _____

OCIC Handbook (Tables) _____

EC Handbook (Tables) _____

Take-Home Package Materials _____

1b. You indicated that _____ in the TSP should be replaced. Please describe what you think the replacement should be.

Familiarization Course _____

Observer/Controller Handbook _____

Tools and Reference Materials _____

OCIC Handbook (Tables) _____

EC Handbook (Tables) _____

Take-Home Package Materials _____

1c. Why should _____ be deleted? _____

_____

_____

1d. Is there some other component you need that should be added? Please describe.

_____

2a. You indicated that _____ in the OCIC Handbook should be modified. Please describe how you think it should be modified.

OPORD Narratives _____

Execution Guidance _____

Table Preview _____

Event Guides _____

AAR Guides _____

AAR Worksheets _____

2b. You indicated that _____ in the OCIC Handbook should be replaced. Please describe what you think the replacement should be.

OPORD Narratives _____

Execution Guidance _____

Table Preview _____

Event Guides _____

AAR Guides _____

AAR Worksheets _____

2c. Why should _____ Be deleted? _____

_____

2d. Is there some other component you need that should be added. Please describe.

_____

3a. Why was the time "Too Much" for those activities you checked? _____

_____

3b. Why was the time "Too Little" for those activities you checked? _____

_____

_____

3c. Do you think the allocation of time among the VTP program activities should be changed? If so, how? _____

_____

3d. After the units' first VTP rotation, what refamiliarization is needed when units return for additional rotations? _____

_____

Training Structure Interview _____

2. Do the VTP tables consistently increase in difficulty? What are the exceptions? Should the order of the tables be changed? _____

_____

4. Should some MTP tasks or subtasks be added to the VTP? Are there other critical tasks or subtasks that should be added that are presently undefined? _____

_____

5. Should there be more or less task overlap and repetition among the VTP tables?

_____

6. Should the AAR agenda or process be improved in some way? _____

_____

7. What AAR aids were most useful? What changes or additions are needed? _____

_____

Training Proficiency Interview _____

(For the following questions, do not limit answers to areas in the questionnaire items.)

1a. What aspects of **leader** performance increased the most during VTP rotations?

_____

1b. What aspects of **leader** performance increased the least during VTP rotations?

_____

2a. What aspects of **unit** performance increased the most during VTP rotations?

_____

2b. What aspects of **unit** performance increased the least during VTP rotations?

_____

Unit Follow Up and Take-Home Package Interview

1a. Should parts of the THP be tailored for each type and level of audience? What is needed for each group at each level besides the THP memorandum and matrices?

Platoon-Level Training _____

Company-Level Training _____

Battalion-Level Training _____

1b. How should Reserve component units use the THP materials to follow Up their VTP training with activities at home station? _____

_____

1b. How should Active component units use the THP materials to follow Up their VTP training with activities at home station? _____

_____

2. What needs to be modified, replaced, or added to the THP Materials book?

_____

_____

3. What could be done to increase the quality of the THPs that are produced? Would additional materials done in other media be beneficial? _____

_____

_____

4. What could be done to make it easier to produce THPs? _____

_____

_____

5. Is a dedicated support staff of operations analysts, writers, graphic/media editors, etc., needed to produce THPs of consistent quality in a reasonable time frame?

_____

_____

General Interview

1. Briefly describe the three most positive or beneficial aspects of the VTP in order of importance (most important first). _____

_____

_____

2. Briefly describe the three aspects of the VTP that are most in need of modification, in order of importance (most important first). _____

_____

_____

3. Briefly describe three major lessons you learned while serving as a VTP O/C or EC.

_____

_____

4. Does structured training like the VTP best apply to Reserve or Active unit training? Why? _____

_____

5. The VTP focuses on execution. Should structured training be developed for mission planning and preparation? How do you think such training should be done? _____

_____

_____

6. Should structured training like the VTP be developed for future simulations like the CCTT? Do you have ideas about specific program changes needed for the CCTT?

_____

_____

7. Do you have any other comments you would like to provide about the VTP? Besides your comments here, feel free to submit more detailed comments in writing.

_____

_____

Appendix C

The O/C Questionnaire

DATA REQUIRED BY THE PRIVACY ACT OF 1974

AUTHORITY: Title 10, USC, Sec 4503.

PRINCIPLE PURPOSE: The data collected with this form are to be used for research purposes only.

ROUTINE PURPOSE: This is an experimental personnel data collection form developed by the U.S. Army Research Institute for the Behavioral and Social Sciences pursuant to its research mission as prescribed in AR 70-1. When identifiers (name or Social Security Number) are requested, they are to be used for administrative and statistical control purposes only.

DISCLOSURE: Your participation in this research is strictly voluntary. Individuals are encouraged to provide complete and accurate information in the interests of the research, but there will be no effect on individuals for not providing all or any part of the information requested.

The purpose of this questionnaire is to collect information from Observer/Controllers (O/Cs) regarding the Virtual Training Program (VTP). We are not interested in evaluating you or your instructional methods. It should take less than thirty minutes to complete this questionnaire. Answer each item to the best of your ability. You will have the opportunity to elaborate upon some of your answers during the interview phase of this data-collection effort.

Please sign your name below indicating that you have agreed to participate in this data collection effort. This page will be removed from the remainder of the questionnaire before responses are examined so that your input will be identified only by general demographic data.

Name: _____

DEMOGRAPHIC INFORMATION: Please provide the following information about your military service.

1. SC/MOS: _____ 2. Rank/Grade: _____

3. Time in Military Service: Years _____ Months _____

4. Time in SC/MOS: Years _____ Months _____

5. When did you report to the Warthog team? Year _____ Month _____

6. Did you have previous O/C experience? Yes _____ No _____
   If yes, then where? _____ For how many months?_____

7. Estimate the number of **rotations** that you have served in each of the following roles during SIMNET training:

	O/C	E/C
a. Armor Plt	_____	_____
b. Mech Plt	_____	_____
c. Scout Plt	_____	_____
d. Company	_____	_____
e. Battalion	_____	_____

8. Estimate the number of **rotations** that you have served in the following roles during Janus training:

	O/C	Interactor
Battalion	_____	_____

9. List any other roles in which you have served on the Warthog team:

_____

_____

_____

TRAIN THE TRAINER: For each item, check the box that best represents your opinion regarding the effectiveness of your training as an O/C or E/C.

1. The quality of your O/C or E/C training was:

   Very good ☐ Good ☐ So-so ☐ Poor ☐ Very Poor ☐

2. The amount of training that you received for each of the following duties was:

	Too Little	About Right	Too Much
a. Conducting advance visits	☐	☐	☐
b. Operating the SIMNET workstations	☐	☐	☐
c. Operating the Janus workstations	☐	☐	☐
d. Conducting SIMNET tables	☐	☐	☐
e. Conducting Janus exercises	☐	☐	☐
f. Conducting AARs	☐	☐	☐

UNIT PREPARATION: For each item, check the box that most closely represents your opinion regarding unit preparation for a VTP rotation.

1. Indicate your opinion about the effectiveness of each of the following materials:

	Good as is	Needs to be Modified	Needs to be Replaced	Needs to be Deleted
a. Orientation Guide	☐	☐	☐	☐
b. Orders and overlays	☐	☐	☐	☐
c. Demonstration tapes	☐	☐	☐	☐

2. The O/Cs' advance visits to units' home-stations were:

   Very Important ☐ Important ☐ Unimportant ☐ Very Unimportant ☐

3. Estimate the percent of units that were adequately prepared for their VTP training:
   0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐

4. With regard to emphasizing the tasks that the units performed in the tables, the demonstration tapes were:
   Very good ☐ Good ☐ So-so ☐ Poor ☐ Very Poor ☐

5. With regard to helping the units go through more training tables during their VTP rotation, the demonstration tapes were:
   Extremely useful ☐ Useful ☐ Somewhat useful ☐ Not useful ☐

TRAINING MANAGEMENT: For each item, check the box that best represents your opinion regarding each component of the VTP.

1. Indicate your opinion of the following Training Support Package (TSP) components:

	Good as is	Needs to be Modified	Needs to be Replaced	Needs to be Deleted
a. Familiarization Course	☐	☐	☐	☐
b. Observer/Controller Handbook	☐	☐	☐	☐
c. Tools and Reference Materials	☐	☐	☐	☐
d. OCIC Handbook (Tables)	☐	☐	☐	☐
e. EC Handbook (Tables)	☐	☐	☐	☐
f. Take-Home Package Materials	☐	☐	☐	☐

2. Indicate your opinion regarding the **format** of the following components of the OCIC Handbook:

	Good as is	Needs to be Modified	Needs to be Replaced	Needs to be Deleted
a. OPORD Narratives	☐	☐	☐	☐
b. Execution Guidance	☐	☐	☐	☐
c. Table Preview	☐	☐	☐	☐
d. Event Guides	☐	☐	☐	☐
e AAR Guides	☐	☐	☐	☐
f. AAR Worksheets	☐	☐	☐	☐

3. Indicate your opinion about the allotted **time** for the following SIMNET activities:

	Too Little	About Right	Too Much
a. Familiarization Course	☐	☐	☐
b. Table Previews	☐	☐	☐
c. Troop Leading Procedures	☐	☐	☐
d. Table Execution	☐	☐	☐
e. AAR Preparation	☐	☐	☐
f. AARs for Platoon Tables	☐	☐	☐
g. Platoon AARs for Company Tables	☐	☐	☐
h. Company AARs for Company Tables	☐	☐	☐
i. Battalion Staff Section AARs	☐	☐	☐
j. Full Battalion AARs	☐	☐	☐

TRAINING STRUCTURE: For each item, check the box which best represents your opinion regarding the following statements about the structure of the VTP.

1. The stealth preview aided the units' ability to conduct the tables.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

2. The VTP training tables progressed from less to more difficult.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

3. The progression in difficulty enhanced the VTP's effectiveness.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

4. The critical subtasks identified key aspects of unit performance.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

5. Subtask repetition helped the units to improve their performance across tables.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

6. The AAR structure promoted discovery learning by the units.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

7. The use of the AAR tools helped the units to understand their performance.
   Strongly agree ☐ Agree ☐ Don't agree ☐ Strongly Disagree ☐

TRAINING PROFICIENCY: The following items identify specific aspects of leader or unit performance.

1. On a numerical scale from 0% to 100% where 100% represents the best possible performance and 0% the worst, estimate the level of performance for a **typical unit leader** at the start and end of his VTP rotation.

	Start	End
a. Troop-leading procedures	_____	_____
b. Monitoring the battlefield situation	_____	_____
c. Controlling unit fire and maneuver	_____	_____
d. Explaining reasons for their actions during the AARs	_____	_____
e. Overall performance	_____	_____

2. Using the same scale as for item set 1, now estimate the level of performance for a **typical unit** at the start and end of their VTP rotation.

	Start	End
a. Maintaining formations and executing formation changes	_____	_____
b. Making reports	_____	_____
c. Executing battle drills	_____	_____
d. Occupying and defending battle positions	_____	_____
e. Overall performance	_____	_____

3. Estimate the percent of unit improvement that was a function of coaching by the O/Cs or E/Cs.
   0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐

4. Estimate the percent of unit improvement that was a function of adapting to the SIMNET terrain data base.
   0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐

5. Estimate the percentage of unit improvement that was a function of adapting to the SIMNET equipment.
   0-25% ☐ 26-50% ☐ 51-75% ☐ 76-100% ☐

UNIT FOLLOW-UP AND TAKE-HOME PACKAGES: These items deal with the materials sent to the units' home-station after a VTP rotation.

1. At each level of training, indicate the groups that need feedback materials in a Take-Home Package (THP). Check as many boxes as you want for each unit training level.

Group	Unit Training Level		
	Platoon	Company	Battalion
a. Crews or Squads	☐	☐	☐
b. Vehicle Commanders	☐	☐	☐
c. Platoon Ldrs/Sgts	☐	☐	☐
d. Company Leaders	☐	☐	☐
e. Battalion Staff	☐	☐	☐
f. Next Superior HQ (to BN staff)	☐	☐	☐

2. Indicate the usefulness of the THP materials book contents in helping to make up THPs:
   Extremely useful ☐ Useful ☐ Somewhat useful ☐ Not useful ☐

3. Indicate the typical quality of the produced THPs:
   Very Good ☐ Good ☐ So-so ☐ Poor ☐ Very Poor ☐

4. Indicate the difficulty for experienced O/Cs to produce a THP:
   Very Easy ☐ Easy ☐ So-so ☐ Hard ☐ Very Hard ☐

5. Estimate how many THPs you worked on at each unit level, and the average number of hours that you spent working per THP:

	Platoon	Company	Battalion
Number of THPs	_____	_____	_____
Manhours per THP	_____	_____	_____

Appendix D

Data for the Structured Interviews

	Number of Comments
A. Data for the Demographic Questions[1]	
1. Most helpful previous experience:	
Military/Field experience	22
Instructor	11
National Training Center (NTC)	7
Computer	5
Other experiences	7
2. Important qualifications for selecting an observer/controller (O/C):	
Field experience at appropriate level	18
Proper schooling	12
Computer/Equipment background	4
Job experience as field O/C	4
Other experiences	4
3. Important qualifications for selecting an exercise/controller (EC):	
Military/Field experience	21
Tactical knowledge	15
Computer literacy	13
Education/Technology skills	6
B. Data for the Train The Trainer Questions	
1. Training received:	
Workstation/Equipment training	22
Conducting an after-action review (AAR)	10
Doctrinal (tactics, techniques, procedures)	4
Other types of training	8

[1] Numbering scheme used in this appendix differs from that used for the structured interviews (see Appendix B.)

		Number of Comments
2.	Most helpful aspects of the participants' training:	
	Workstation/Equipment training	15
	Conducting the AARs	8
	Other types of training	11
3.	Least helpful aspects of the participants' training:	
	None	9
	Using the SIMUTA training/books	6
	Conducting the AARs	4
	Using the Unit Performance Assessment System (UPAS)	3
	Other types of training	9
4.	Need for additional training:	
	On using the workstation/equipment	7
	On conducting the AARs	5
	On completing the take-home packages (THPs)	3
	On other aspects of the Virtual Training Program (VTP)	6
	No need, as training was adequate	12
5.	Procedures for training future O/Cs and ECs:	
	Having a formal certification program	14
	Having a mentor	8
	Reading the instructor manuals	3
	Completing school house training	3
	Other types of training	3
6.	Could unit personnel perform the duties of an O/C or E/C? Yes: 19 respondents No: 10 respondents	
6a.	"Yes" respondents: Unit personnel would need to take:	
	A formal certification program for O/Cs and ECs	3
	Hardware/Software training	3
	Same training as VTP O/Cs and ECs plus OJT	3
	Other types of training	8
6b.	"Yes" respondents: Unit personnel would still have problems with:	
	Technical skill requirements	10
	Ability	8
	Objectivity	8
	Efficiency	7

	Number of Comments
6c. "No" respondents: Unit personnel deficient in:	
Technical skill requirements	6
Ability	4
Objectivity	4
Efficiency	2

(Items 7a-7b deal with the participants' responses to the questionnaire items on time for O/C training)

7a. Reasons given for indicating that training for the O/C team was "too much:"	
Conducting advance visits	0
Operating the Simulation Networking (SIMNET) workstations	0
Operating the Janus workstations	0
Conducting SIMNET tables	3
Conducting Janus exercises	1
Conducting AARs	1

7b. Reasons given for indicating that the training for the O/C team was "too little:"	
Conducting advance visits	18
training did not focus on unit visits (6)[2]	
Operating the SIMNET workstations	7
more hands-on training required (5)	
Operating the Janus workstations	18
need more hands-on as skills deteriorate (5)	
learned while conducting the exercises(3)	
Conducting SIMNET tables	9
learned while conducting the exercises(3)	
Conducting Janus exercises	11
re-familiarization training (4)	
did not receive any formal training (3)	
Conducting AARs	6
did not receive any formal training (3)	

[2] Listing of response category(ies) with number in parentheses denoting response frequency for the category.

	Number of Comments

C. Data for the Unit Preparation Questions

1. Need for additional advance materials:
   Yes: 13 respondents No: 14 respondents
   Not sure: 2 respondents

2. Lessons learned about handling advance visits and unit coordination:

Must continue face-to-face interactions	8
No recommendations (good as is)	6
More time for unit visits	5
More unit leadership involvement	4
Better distribution of materials	4
Other suggestions	6

3. Ways of improving units' preparation for their VTP rotation:

Make units systematically plan and prepare for their rotation	13
Have O/Cs conduct unit visit sooner	7
Have unit leadership emphasize the need for plan/preparation	6
Better distribution of materials	4
Other suggestions	4

4. Ways of improving the demonstration tapes:

Produce more tapes	7
Produce more detailed tapes	7
Provide more cues on tapes	3
Other recommendations	3
No recommendations made (tapes are good)	14

5. Ways of improving use of the demonstration tapes:

More systematic review by units	12
Disseminate to all unit levels	11
Use during AARs	7
Other recommendations	5

	Number of Comments
(Items 6a-6c deal the participants' responses to questionnaire items on unit preparation materials.)	
6a. Reasons given for indicating a need to modify the:	
Orientation Guide	10
more materials need to be added (3)	
Orders and Overlays	32
need to be standardized (13)	
need to correct errors (12)	
Demonstration Tapes	12
add additional tapes (3)	
6b. Reasons given for indicating a need to replace the:	
Orientation Guide	2
Orders and Overlays	4
Demonstration Tapes	0
6c. Reasons given for indicating a need to eliminate the:	
Orientation Guide	1
Orders and Overlays	0
Demonstration Tapes	0

D. Data for the Training Management Questions

1. Need to change the time allocated for the different VTP activities:

Yes: 21 respondents No: 4 respondents
Maybe: 4 respondents

1a. Changes recommended by the "yes" respondents:	
Time for AARs should be flexible	9
Time for different activities should depend on unit's level of skill/experience	4
More time needed for troop leading procedures	3
Other reasons	11
2. Comments about re-familiarizing units with SIMNET:	
Familiarization (Fam) course is always important	11
Depends on percentage of old/new personnel	8
Depends on time between rotations	7
Other actions	5

	Number of Comments
(Items 3a-3d deal with the questionnaire items on the Training Support Packages (TSPs):	
3a. Reasons given for indicating a need to modify the:	
Fam Course	12
changes needed to SIMUTA materials (3)	
O/C Handbook	20
reorganize it (9); update materials (3)	
Tools and reference materials	23
reorganize them (3)	
OCIC Handbook (tables)	25
reorganize it (8); combine with EC Handbook (7)	
EC Handbook (tables)	23
reorganize it (7)	
combine it with the OCIC Handbook (4)	
THP Materials	20
standardize the materials (5)	
3b. Reasons given for a need to replace the:	
Fam Course	0
O/C Handbook	0
Tools and reference materials	0
OCIC Handbook	0
EC Handbook (tables)	0
THP materials	7
3c. Reasons given for indicating a need to delete the:	
Fam Course	0
O/C Handbook	0
Tools and reference materials	0
OCIC Handbook (tables)	0
EC Handbook (tables)	1
THP materials	0
3d. Additional TSP components needed:	
None	11
User manuals for the SIMNET stations and Janus	4
Short orientation course	3
Training aids	3
Other components	3

	Number of Comments
(Items 4a-4d deal with the questionnaire items on the OCIC Handbook's format)	
4a. Reasons given for indicating a need to modify:	
Operation order (OPORD) narrative	13
standardize to current military doctrine (7)	
correct errors (5)	
Execution guidance	4
Table preview	7
Event Guides	5
AAR Guides	3
AAR Worksheets	9
4b. Reasons given for indicating a need to replace the:	
OPORD narratives	1
Execution guidance	0
Table preview	0
Event Guides	0
AAR Guides	0
AAR Worksheets	1
4c. Reasons given for indicating a need to delete the:	
OPORD narratives	0
Execution guidance	1
Table preview	0
Event Guides	0
AAR Guides	1
AAR Worksheets	8
not used/duplication of event guides (7)	
4d. Need to add to the OCIC Handbook:	
Yes: 10 respondents No: 19 respondents	

	Number of Comments
(Items 5a and 5b deal with the questionnaire items on the time for different VTP activities)	
5a. Reasons for indicating that the allocated time was "too much" for:	
Fam Course	1
Table preview	0
Troop leading procedures	1
Table execution	0
AAR preparation	0
AARs for platoon (PLT) tables	0
PLT AARs for company (CO) tables	2
need leadership involvement (2)	
Company AARs for CO tables	3
Battalion staff section AARs	2
Full battalion AARs	5
more "time discipline" needed (3)	
5b. Reasons for indicating that the allotted time was "too little" for:	
Fam Course	11
need to train basic skills (4)	
need to acclimate to SIMNET (4)	
Table preview	1
Troop leading procedures	20
units not prepared (9)	
need more time at SIMNET (5)	
Table execution	2
AAR preparation	7
O/Cs need flexibility (5)	
AARs for PLT tables	0
PLT AARs for CO tables	7
leaders not present (2)	
15 minutes for AAR is nonsense (2)	
CO AARs for CO tables	3
O/Cs need flexibility (3)	
Battalion staff section AARs	6
need more time to prepare (3)	
Full battalion AARs	5

Number of Comments

E. Data for Training Structure Questions

1. Do the VTP tables increase in difficulty?
   Yes: 26 respondents No: 3 respondents

2. Exceptions to the crawl-walk-run table sequence:

Some fundamental tables are more difficult than some PLT offensive/defensive tables	9
None	7
PLT tables are harder than CO tables	6
Other exceptions	7

3. Need to change the order of the tables?
   Yes: 10 respondents No: 19 respondents

4. Need to add any mission training plan (MTP) tasks or subtasks?
   Yes: 14 respondents No: 12 respondents
   Don't Know: 3 respondents

4a. Additional MTP task indicated by the "yes" respondents:

Movement techniques (formations)	4
Tasks determined by task analysis	4
Other tasks	7

5. Need to add critical tasks or subtasks that are presently undefined?
   Yes: 15 respondents No: 12 respondents
   Don't know: 2 respondents

6. Need to have more or less task overlap and repetition among the VTP tables?
   Okay as is: 26 respondents More overlap: 1 respondent
   Don't know: 2 respondents

7. Need to improve the AAR agenda or process?
   Okay as is: 18 respondents Yes: 11 respondents

		Number of Comments
7a.	Changes to the AAR agenda or responses indicated by the "yes" respondents:	
	Make it made more flexible	7
	Need for additional presentation tools	5
	Need to automate presentation tools	4
	Other reasons	9
8.	Most useful AAR aids:	
	Data logger with voice (linked to stealth)	20
	Events poster	16
	Magnetic tanks, vehicles, etc	5
	Other	6
9.	Suggested additions or changes to the AAR aids:	
	UPAS	9
	Bigger/wider plan view display screen	6
	Visual aids	4
	Modified Semi-Automated Forces (MODSAF) 1.5	3
	Other changes or additions	7

F. Data for the Training Proficiency Questions

1.	Aspects of leader performance that increased the most:	
	Command and control	19
	Situational (battlefield) awareness	8
	Leadership/Confidence in one's ability	6
	Other aspects	1
2.	Aspects of leader performance that increased the least:	
	Troop leading procedures	8
	At BN level, delegating authority	7
	Coordination of PLT fires	3
	Navigation and map reading skills	3
	Other aspects	4
3.	Aspects of unit performance that increased the most:	
	Reporting	12
	Actions on contact	11
	Formations	10
	Teamwork/Cohesion	9
	Other aspects	3

		Number of Comments
4.	Aspects of unit performance that increased the least:	
	Situational awareness	7
	Gunnery	7
	Occupy/Defend battle position	4
	Communication/Crosstalk	4
	Other aspects	11

G. Data for the Unit Follow-up and Take-Home Package Questions

1. Should parts of the THP be tailored to each type and level of audience?

Yes: 17 respondents No: 12 respondents

1a.	Should parts of the THP be tailored just to PLT tables?	
	Crews or squads	3
	All others	26
1b.	Should parts of the THP be tailored just to CO tables?	
	Crews or squads	1
	All others	26
1c.	Should parts of the THP be tailored just to BN tables?	
	Crews or squads	1
	All others	28

2.	Additional THPs needed for PLT (all groups):	
	Checklist rather than matrix	4
	UPAS data	3
	Tapes	3
	Feedback from units	3
	Other additions	6

3.	Ways for the reserve components (RCs) to use the THPs:	
	Focus on tasks needing training	14
	Plan/Prepare for future home station training	9
	Crosswalk with unit mission essential task list	5
	Follow FM 25-100/101	4
	Other ways	4

4.	Ways for the active components (ACs) to use the THPs:	
	Same as RC (ACs have more time and resources)	26
	Perform other activities	3

Number of Comments

5. Changes needed to the THP materials book?

Okay as is:	9 respondents
Add to it:	9 respondents
Modify parts of it:	4 respondents
Replace parts of it:	3 respondents
Delete parts of it:	1 respondents
Not Sure:	3 respondents

5a. Reasons for:

Modifying the THP materials book	7
avoid duplication/eliminate redundancy (3)	
Replacing the THP materials book	5
use AAR tape (2)	
Adding to the THP materials book	11
videotape unit performance (4)	

6. Ways for increasing the quality of the produced THPs:

Provide AAR tape	17
Automate the process (laptop computers)	11
Improve the THP format	4
Other ideas	4

7. Ways for making it easier to produce the THPs:

Automate tools for O/Cs	21
Standardization	8
Nothing (OK as is)	3
Other ways	5

8. Need for a dedicated staff of specialists to produce the THPs?

Yes: 14 respondents No: 12 respondents
Not Sure: 3 respondents

	Number of Comments

H. Data for the General Questions

(Items 1a-1c deal with the three most positive or beneficial aspects of the VTP to the participants)

1a. Most beneficial aspects:	
Cost-effective/Quality training	9
Structured training	9
Audio/Visual (AAR) feedback	4
Dedicated O/C and EC team	3
Hardware/Software	3
1b. Second most beneficial aspects:	
Cost-effective/Quality training	12
Structured training	13
Audio/Visual (AAR) feedback	3
Dedicated O/C and EC team	1
Hardware/Software	2
1c. Third most beneficial aspects:	
Cost-effective/Quality training	4
Structured training	8
Audio/Visual (AAR) feedback	8
Dedicated O/C and EC team	3
Hardware/Software	1

(Items 2a-2c deal with the participants' opinions about the three aspects of the VTP that need to be modified)

2a. Most in need of modification:	
Hardware/Software	12
Training development process	7
Standardization of OPORDs[3]	3
Other aspects	6

[3] Standardization involves making sure that the OPORDs are consistent across echelons and conform to Army doctrine.

		Number of Comments
2b.	Second most in need of modification:	
	Hardware/Software	10
	Training development process	6
	Standardization of OPORDs	9
	Other aspects	4
2c.	Third most in need of modification:	
	Hardware/Software	9
	Training development process	2
	Standardization	9
	Other aspects	3
3.	Major lessons learned from being an O/C or EC:	
	Structured training used	9
	Knowledge of operations, tactics, doctrine	8
	Knowledge of RC/AC structure and training	4
	Hardware/Software	4
	Other lessons	4
4.	Does structured training like the VTP best apply to RC or AC training?	
	RC: 6 respondents AC: 0 respondents	
	Both: 23 respondents	
4a.	Reasons given:	
	Both, RC/AC training constrained by OPTEMPO	5
	RC, because it's simpler/basic, only PLT and CO tactics training most units will get, and biggest bang for the bucks (time/resources)	7
	Other reasons	8
5.	Should structured training be developed for mission planning and preparation:	
	Yes: 21 respondents No: 7 respondents	
	Not Sure: 1 respondent	
5a.	"Yes" respondents: Method of structured training:	
	At Army school-houses	6
	After execution skills are acquired	4
	Other ideas	14

		Number of Comments
5b.	If "no" response, then why not?	
	Not efficient use of resources	6
6.	Should structured training like the VTP be developed for future simulations like the Close-Combat Tactical Trainer (CCTT)?	
	Yes: 21 respondents No: 7 respondents	
	Not Sure: 1 respondent	
6b.	Ideas from "yes" respondents about changing the VTP:	
	Tailor VTP to CCTT capabilities	12
	Set up like SIMUTA	4
	Other ideas	4
7.	Final comments about the VTP:	
	Positive	20
	Negative	0
	Needs Modification	9

Appendix E

Statistical Procedures For Questionnaire Items

The questionnaire items required three types of responses: (a) unordered categories, (b) ordered categories (c) numerical estimates. Summarized below are the statistical analyses done on items of each type. All procedures used the Basic and Advanced modules of SPSS for Windows 6.1.2 (Norusis, 1993).

Unordered Categories

This section deals with the following items: (a) #1 from the Train the Trainer set; (b) #2-#5 from the Unit Preparation set; (c) #1-#7 from the Training Structure set; (d) #3-#5 from the Training Proficiency set; and (e) #2-#4 from the Unit Follow-Up and Take-Home Package set.

Differences in distributions of responses among the Warthog Observer/Controller groups (Officers, Non-commissioned Officers--NCOs, Civilians, and Management) were tested by the Pearson chi-square test for k = 4 independent samples with $\alpha = .05$. Follow-up pairwise comparisons used Fisher's exact test with $\alpha = .02$.

Commonly, when group differences were not statistically significant, single-sample tests of proportions were done. Binomial tests of the proportion of responses in a selected category (or sometimes two categories together) for all groups of O/Cs combined had the null hypothesis $p = .50$ and $\alpha = .02$. This tested whether a statistically significant majority of O/Cs agreed on the same response, or if a majority disagreed with that responses.

Some sets of items asked the same question about members of a class of entities. When group differences were not found statistically significant for all items in the set, differences of O/C opinion among the entities were of interest. Then, the combined proportion of responses in a selected category were compared among items using the Cochran Q test for k related samples with $\alpha = .05$. Pairwise comparisons by the McNemar test used $\alpha = .02$.

Ordered Categories

These items were as follows: (a) #2 from the Train the Trainer set; (b) #1 from the Unit Preparation set; (c) #1-#3 from the Training Management set; and (d) #1 from the Unit Follow-Up and Take-Home Package set.

Differences in distributions of responses among the Warthog Observer/Controller groups (Officers, Non-commissioned Officers, Civilians, and Management) were tested by the rank-order Kruskal-Wallis test for k = 4 independent samples with α = .05. Follow-up Mann-Whitney pairwise comparisons used α = .02.

Commonly, when group differences were not statistically significant, single-sample tests of proportions were performed just as done for unordered categories. Binomial tests of the proportion of responses in a selected category (or sometimes two categories together) for all groups of O/Cs combined were done with the null hypothesis p = .50 and α = .02. This tested whether a statistically significant majority of O/Cs agreed on the same response, or disagreed with that responses.

Again, some sets of items asked the same question about members of a class of entities. When group differences were not found statistically significant for all items in the set, differences of O/C opinion among the entities were of interest. Then, the combined samples of ordered responses were compared among items using the Friedman test for k related samples with α = .05. Pairwise comparisons used the Wilcoxon signed-ranks test with α = .02.

Numerical Estimates

Numerical estimates were provided for items 1a-2e from the Training Proficiency set and item 5 for the last set of items. Descriptive statistics for these items were obtained using the SPSS Explore and Tables procedures. For individual variables, O/C group means were compared by analysis of variance with α = .05, and follow-up pairwise t-tests with α = .02.

For Training Proficiency item groups 1a-1e and 2a-2e, 4 x 5 x 2 repeated-measure multivariate analyses of variance were done, with α = .05 for each main effect and interaction. In these analyses the four O/C groups served as the between-subjects

factor, with the five items (aspects of performance) and gains (performance at the start vs. the end of training) as within-subjects repeated-measure factors. The Pillai statistic was used for multivariate significance tests. When no group differences or interactions were found statistically significant, follow-up paired comparisons were done on means for the groups combined using dependent-sample t-tests. The ten comparisons among the item means at both the start and end levels used $\alpha = .01$. Tests of gain for each item used $\alpha = .02$.

Appendix F

Data for Questionnaire Items on Train the Trainer

Table F-1

Response Frequencies of the Judgements by O/C Personnel Regarding the Quality of Their Training

Judgements	Officers (n=6)	NCOs (n=8)	Civilians (n=9)	Management (n=6)
Very Poor	0	0	0	0
Poor	0	0	1	1
So-So	1	0	2	0
Good	5	5	2	5
Very Good	0	3	4	0

Significant differences among groups not found ($p > .05$) in the chi-square and Kruskal-Wallis tests.

Table F-2

A Mann-Whitney Comparison of O/C Personnel's Judgements Regarding the Quality of Their Training

Type of Personnel	Cases	Mean Ranks	Sum of Ranks	U Value	W Value	Z Value	Probability Level
Officer/ Management	12	12.13	145.5				
Vs.				67.5	145.5	-1.72	.08
Civilian	17	17.03	289.5				

Table F-3

Opinions on the Amount of Training Received for O/C or EC Duties

Type of duty	Too little		About right		Too much	
	n	P	n	P	n	P
Conducting advance visits	11	45.8	13	54.2	0	0.0
Operating SIMNET workstations	7	24.1	22	75.9*	0	0.0
Operating Janus workstations	10	34.5	19	65.5	0	0.0
Controlling SIMNET tables	3	10.3	24	82.8*	2	6.9
Controlling Janus exercises	8	27.6	19	65.5	2	6.9
Conducting AARs	7	26.9	18	69.2	1	3.8

*$p < .02$ testing the hypothesis $P = 50$.

Table F-4

Relative Rankings of Table E-3's Data as Determined by Kendall Coefficient of Coordinance

Type of duty	n	Mean Ranks
Conducting advance visits	23	2.11*
Operating SIMNET workstations	23	2.46
Controlling SIMNET Tables	23	2.85
Conducting AARs	23	2.59

*$P < .02$ for the comparison between conducting advance visits and conducting AARs.

Appendix G

Findings for Questionnaire Items on Unit Preparation

Table G-1

Opinions on the Effectiveness of VTP Materials for Unit Preparation

	Delete		Replace		Modify		Good	
Material	n	P	n	P	n	P	n	P
Orientation guide	1	3.7	1	3.7	6	22.2	19	70.4
Orders and overlays	0	0.0	3	10.7	17	60.7	8	28.6
Demonstration tapes	0	0.0	1	3.7	7	25.9	19	70.4

Table G-2

Response Frequencies by O/C Personnel to the Question on the Effectiveness of the Orientation Guide

	Delete	Replace	Modify	Good
Personnel Type	n	n	n	n
Officers	0	1	1	4
NCOs	1	0	1	6
Civilians	0	0	0	7
Management	0	0	4*	2

*Chi-square tests showed that a significant difference ($p < .02$) existed between the proportion of modify responses indicated by the Management group as compared to the rest of the sample.

Table G-3

Response Frequencies by O/C Personnel to the Question on the Effectiveness of Orders and Overlays

	Delete	Replace	Modify	Good
Personnel Type	n	n	n	n
Officers	0	2	2	2
NCOs	0	1	3	4
Civilians	0	0	6	2
Management	0	0	6*	0

*Chi-square tests revealed a significant difference ($p < .02$) between the proportion of modify responses indicated by the Management group as compared to the rest of the sample.

Table G-4

Response Frequencies by O/C Personnel to the Question on the Effectiveness of Demonstration Tapes

	Delete	Replace	Modify	Good
Personnel Type	n	n	n	n
Officers	0	1	1	3
NCOs	0	0	2	6
Civilians	0	0	0	8
Management	0	0	4*	2

*Chi-square tests demonstrated that significant difference($p < .02$) existed between the proportion of modify responses indicated by the Management group as compared to the rest of the sample.

Table G-5

Means and Standard Deviations of Participants' Estimates to Unit Preparation Items 2-5

Item Stem	N	M	S.D
Importance of O/Cs' advance visits	28	3.64[a]	0.488
Percentage of prepared VTP units	29	2.06[b]	0.753
Demo tapes emphasized unit tasks	25	4.00[c]	0.645
Demo tapes useful to train units	23	2.83[d]	0.778

[a]1-4 scale with 4 as "very important."and 1 as "very unimportant." [b]1-4 with 4 = 76-100% and 1 = equaling between 0% and 25% prepared; [c]1-5 scale with 5 as "very good" and 1 as "very poor;" [d]1-4 scale with 4 as "extremely useful"and 1 as "not useful."

Appendix H

Results for Questionnaire Items on Training Management

Table H-1

Opinions on the Training Support Package Components

	Delete		Replace		Modify		Good	
Component	n	P	n	P	n	P	n	P
Familiarization Course	0	0.0	0	0.0	7	25.0	21	75.0*
Observer/Controller Handbook	0	0.0	0	0.0	13	48.1	14	51.9
Tools and Reference Materials	0	0.0	0	0.0	11	40.7	16	59.3
OCIC Handbook (Tables)	0	0.0	0	0.0	15	55.6	12	44.4
EC Handbook (Tables)	1	3.6	0	0.0	15	53.6	12	42.9
Take-Home Package Materials	0	0.0	4	13.8	9	31.0	16	55.2

*$p < .02$ testing the hypothesis $P = 50$.

Table H-2

Opinions on the OCIC Handbook Components

	Delete		Replace		Modify		Good	
Component	n	P	n	P	n	P	n	P
OPORD Narratives	0	0.0	0	0.0	11	39.3	17	60.7
Execution Guidance	0	0.0	0	0.0	3	11.5	23	88.5*
Table Preview	0	0.0	0	0.0	5	18.5	22	81.5*

(Table H-2 Continued)

Table H-2 Continued

	Delete		Replace		Modify		Good	
Component	n	P	n	P	n	P	n	P
Event Guides	0	0.0	0	0.0	2	7.4	25	92.6*
AAR Guides	0	0.0	1	3.7	2	7.4	24	88.9*
AAR Worksheets	0	0.0	5	17.9	4	14.3	19	67.9

*p < .02 testing the hypothesis P = 50.

Table H-3

Opinions on the Time Available for SIMNET Activities

	Too little		About right		Too much	
Type of activity	n	P	n	P	n	P
Familiarization Course	11	39.3	17	60.7	0	0.0
Table Previews	1	3.6	27	96.4*	0	0.0
Troop Leading Procedures	15	53.6	13	46.4	0	0.0
Table Execution	2	6.9	27	93.1*	0	0.0
AAR Preparation	6	20.7	23	79.3*	0	0.0

p < .02 testing the hypothesis P = 50.

Table H-4

Opinions on the Time Available for AARs by Echelon

	Too little		About right		Too much	
Unit echelon	n	P	n	P	n	P
Platoon	1	3.6	27	96.4*	0	0.0
Platoon in Company Exercise	7	25.9	18	66.7	2	7.4
Company	4	14.8	22	81.5*	1	3.7
Battalion Staff Section	4	14.8	23	85.2*	0	0.0
Full Battalion	4	14.8	20	74.1*	3	11.1

p < .02 testing the hypothesis P = 50.

Appendix I

Findings for Questionnaire Items on Training Structure

Table I-1

Participants' Opinions of the VTP's Structure

	Strongly Disagree		Don't Agree		Agree		Strongly Agree	
Aspect of VTP	n	P	n	P	n	P	n	P
Stealth preview	0	0.0	1	3.4	11	37.9*	17	58.6*
VTP tables	0	0.0	4	13.8	13	44.8*	12	41.4*
Progression	1	3.4	0	0.0	19	65.5*	9	31.0*
Critical subtasks	0	0.0	1	3.4	17	58.6*	11	37.9*
Subtask repetition	0	0.0	0	0.0	18	62.1*	11	37.9*
AAR structure	0	0.0	1	3.4	8	27.6*	20	69.0*
AAR tools	0	0.0	1	3.4	13	44.8*	15	51.7*

*$p < .02$ testing the hypothesis $P = .50$ for the combined percentages in the rating categories "Agree" and "Strongly Agree."

Table I-2

Response Frequencies by O/C Personnel to the Question on the Usefulness of Subtask Repetition

	Strongly Disagree	Don't Agree	Agree	Strongly Agree
	n	n	n	n
Officers	0	0	5	1
NCOs	0	0	6	2
Civilians	0	0	2*	7
Management	0	0	5	1

*Statistical tests indicated a significant difference ($p = .03$) between the proportion of strongly agree responses for the Civilian group as compared to proportion for the rest of the sample. (Significant differences vis-a-vis the different O/C groups were not found for the other Training Structure items.)

Appendix J

Results for Questionnaire Items on Training Proficiency

Table J-1

Estimates of the Proficiency Levels of Unit Leaders and Units at the Start and End of Their VTP training

		Start		End	
Area of Proficiency	n	M	SD	M	SD
Unit Leaders					
Troop-leading procedures*	27	34.81	14.24	68.70	13.34
Monitoring the battlefield situation*	27	26.11	14.10	68.81	13.50
Controlling unit fire and maneuver*	27	24.44	15.71	67.96	19.67
Explaining reasons for actions in AARs*	27	38.70	21.15	77.96	16.36
Overall performance*	27	36.30	12.06	74.37	13.21
Units					
Executing formations and changes*	28	36.18	18.72	81.36	10.51
Making reports*	28	31.43	16.43	80.89	12.10
Executing battle drills*	27	31.11	18.47	78.33	12.56
Occupying and defending battle positions*	26	30.77	17.19	69.73	18.81
Overall performance*	27	34.93	16.16	76.15	13.74

*Statistical tests revealed a significant difference ($p < .05$) between the starting and ending estimates of unit proficiency.

Table J-2

Difference Scores for the Estimated Starting and Ending Levels of Proficiency

	Difference Scores		
Area of Proficiency	n	M	SD
	Unit Leaders		
Troop-leading procedures	27	33.89	16.60
Monitoring the battlefield situation	27	42.70	16.03
Controlling unit fire and maneuver	27	43.52	21.61
Explaining reasons for actions in AARs	27	39.25	23.17
Overall performance	27	38.07	16.65

(Table J-2 Continued)

Table J-2 Continued

Area of Proficiency	Difference Scores n	M	SD
	Units		
Executing formations and changes	28	45.18	20.39
Making reports	28	31.43	17.97
Executing battle drills	27	47.22	19.76
Occupying and defending battle positions	26	38.96	18.47
Overall performance	27	41.22	16.90

Table J-3

Results of Significant Comparisons ($p < .05$) among Difference Scores

Comparisons	Cases	df	Mean Diff	SE[a]	t
		Unit Leaders			
Troop Leading Procedures vs. Controlling Unit Fires	27	26	9.63	3.62	2.66
Troop Leading Procedures vs. Explaining Reason during AARS	27	26	8.81	2.50	3.52
Controlling Unit Fires vs. Overall performance	27	26	5.44	2.34	2.33
		Units			
Occupying and Defending vs. Maintaining Formations	26	25	7.96	2.56	3.11
Occupying and Defending vs. Making Reports	26	25	12.00	2.22	5.40
Occupying and Defending vs. Executing Battle Drills	26	25	9.30	2.41	3.86
Occupying and Defending vs. Overall Performance	25	24	3.60	1.71	2.10
Making Reports vs. Overall Performance	27	26	8.96	2.00	4.48

(Table J-3 Continued)

Table J-3 Continued

Comparisons	Cases	df	Mean Diff	SE[a]	t
Executing Battle Drills vs. Overall Performance	26	25	5.46	2.50	2.19

[a]The standard error of the difference mean.

Table I-4

Participants' Opinions on the Percentage of Unit Improvement Attributable to Coaching, Adapting to SIMNET Terrain and Equipment

	0-25%		26-50%		51-75%		76-100%	
Material	n	P	n	P	n	P	n	P
Function of coaching								
Management Group	2	33.3	1	16.7	3	50.0	0	0.0
Other Groups	1	4.3	4	17.4	13	56.5	5	21.7
Adapting to terrain								
Management Group	5	83.3*	1	16.7	0	0.0	0	0.0
Other Groups	5	21.7	13	56.5	3	13.0	2	8.7
Adapting to equipment								
Management Group	6	100.0*	0	0.0	0	0.0	0	0.0
Other Groups	5	21.7	12	52.2	4	17.4	2	8.7

*Statistical tests showed that the cited proportion for Management Group was significantly different ($p < .02$) than those for the other groups.

Appendix K

Data for Questionnaire Items on Unit Follow-up and Take-Home Packages (THPs)

Table K-1

Number of THPs Worked by Unit Level and Type of O/C Personnel

O/C Group	Platoon Level N	Platoon Level Mean*	Platoon Level SD	Company Level N	Company Level Mean*	Company Level SD	Battalion Level N	Battalion Level Mean	Battalion Level SD
Officers	6	77.50	47.83	5	34.00	15.17	5	18.60	6.50
NCOs	8	36.75	12.66	1	1.00	0.00	5	11.60	3.21
Civilians	8	21.00	20.47	5	9.80	8.81	2	31.50	33.23
Management	4	3.75	4.27	2	2.00	0.00	4	8.75	8.38
Total	26	36.23	35.69	13	17.23	17.42	16	15.56	12.50

*Significant differences among means at .02 level.

Table K-2

Results of Significant ($p < .05$) Mann-Whitney Comparisons in the Number of THPs Worked by O/C Personnel

Comparisons	U-Value	W-Value	Z-value	P
		Platoon Level		
Officers vs Civilians	4.00	40.00	2.62	0.01
Officers vs. Management	0.00	10.00	2.57	0.01
NCOs vs. Civilians	12.00	48.00	2.11	0.03
NCOs vs. Management	0.50	10.50	2.66	0.01
		Company Level		
Officers vs Civilians[a]	1.00	16.00	2.43	0.01

[a]Only comparison which can be made because of the small ns for NCO and Management Personnel (see Table K-1).

Table K-3

Number of Hours per THP by Unit Level and Type of O/C Personnel

O/C Group	Platoon Level N	Platoon Level Mean	Platoon Level SD	Company Level N	Company Level Mean	Company Level SD	Battalion Level N	Battalion Level Mean	Battalion Level SD
Officers	6	2.67	0.82	5	2.60	0.89	5	2.53	1.61
NCOs	8	2.88	1.13	1	3.00	0.00	5	3.33	1.18
Civilians	8	2.63	1.06	5	2.40	1.67	2	1.82	0.25
Management	4	1.25	0.50	2	2.00	0.00	4	3.25	2.06
Total	26	2.50	1.07	13	2.46	1.13	16	2.87	1.49

Table K-4

Participants' Opinions about the Need for THPs for Platoon, Company, and Battalion Tables

Type of Units	Platoon (PLT) Tables Need	Platoon (PLT) Tables No Need	Company (CO) Tables Need	Company (CO) Tables No Need	Battalion (BN) Tables Need	Battalion (BN) Tables No Need
Crews/squads	20[a]*	8	9	19	4	25*
Vehicle Commanders	23*	6	14	15	5	24*
PLT Leaders/Sergeants	27*	2	27*	2	13	16
CO leaders	13	16	27*	2	26*	3
BN Staff	6	23*	15	14	28*	1
Higher Headquarters	5	24*	15	14	8	21

[a]Number of participants. *response frequency is significantly ($p < .02$) greater than 50%.

Table K-5

Participants' Opinions about the Usefulness Of the THP Materials Book, the Quality of the Produced THPs, and the Ease of THP Completion (N=28)

Item	Mean	SD
Usefulness of THP materials book	2.89[a]	0.885
Quality of the Produced THPs	4.07[b]	0.716
Ease to Produce the THPs	3.75[c]	0.701

[a]4=extremely useful, 3=useful, 2=somewhat useful, 1=not useful. [b]5=very good, 4=good, 3=so-so, 2=poor, 1=very poor. [c]5=very easy, 4=easy, 3=so-so, 2=hard, 1=very hard.